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THE WOUNDED AS WE SEE THEM AT HOME.*

BY

W. C. ALLARDICE, M.D.GLASG., F.R.C.S.EDIN.,

SURGEON, STOKE WAR HOSPITAL AND THE NORTH STAFFORDSHIRE INFIRMARY.

THE establishment of the local war hospital has brought us in contact with a class of case we did not see in civil practice—namely, septic wounds which do not readily respond to routine treatment. The reason for this is realized when we consider the surroundings of the soldier at the time the wounds are inflicted.

The important point is that the wounded man may have to lie for a considerable time on the ground, which has been highly cultivated and is rich in all kinds of pathogenic germs. A typical example was one case which received a shrapnel wound in the foot and lay for four days in a shell hole. He had a piece of biscuit on the second day from a comrade, and on two occasions drank his own urine to quench his thirst; on the fourth night he managed to crawl to the British lines in an exhausted condition. On admission here it was found that the fibula and astragalus had been smashed by the bullet, and he had lost three toes from frostbite. The whole foot was thoroughly septic, but eventually he made a good recovery. The length of this man's exposure is exceptional, but it is quite common for patients to be wounded in the early morning and not to be brought in till the night. Under such conditions serious wounds have plenty of time to become thoroughly septic, and it is no cause for wonder that the treatment is difficult and anxious. Indeed, the condition of these wounds has led some writers to talk of the failure of antiseptics, and to draw comparisons with the state of affairs in the Crimean war.

I have heard that campaign discussed by the late Sir George Macleod, who had been surgeon to a hospital in the Crimea. As might be expected previous to Lister's teaching, the results of wounds were deplorable. Suppuration was the rule, erysipelas and hospital gangrene quite common, and secondary haemorrhage was a frequent cause of death. The lower wards in a hospital were often ventilated through the floor of the ward overhead. When acute sepsis occurred on the ground floor it was noticed that round those primitive ventilators on the next floor the wounds were specially liable to go wrong. Any wound of a joint necessitated amputation to avoid pyaemia, and amputations were planned for rapidity in the first place, flaps being but roughly fashioned, and coaptation obtained by a few strips of plaster. The object was to leave the wound freely open for the escape of the pus which was sure to form. This method is comparable to the modern guillotine amputation, which has the same end in view. Blood vessels were ligatured with waxed threads, and the ends left long to hang out of the wound. After a week had elapsed the surgeon pulled on these ends until the ligature came away. When this happened without a gush of blood the patient was considered fortunate. Secondary haemorrhage was treated by cauterizing the bleeding point and flexion of the limb or pressure on the main artery, or a temporary ligature was sometimes applied round the main artery at some distance from the bleeding point. Wounds were incised freely for drainage, and one of the best dressings was found to be the linseed meal poultice. The reason for this we now know was that the poultice was changed frequently, and the warm, moist surface applied to the wound increased the flow of lymph, inhibiting the growth of bacteria, and thus bringing the wound into a healthy condition. The poultice is the predecessor of the modern aseptic fomentation so extensively used in the present war.

Dressings were forwarded to the Crimea from this country, and consisted chiefly of old household linen scraped on one side with a sharp comb to roughen it, and thus form lint, or "charpie" as it was called. An old patient tells me that all the schools in North Staffordshire were given a week's holiday while the scholars prepared this lint and rolled other materials as bandages. Sterilization was unknown in those days, and these dressings, packed in rough sacks, were forwarded to the front, thus adding multitudes of germs from this district to the miseries of the wounded in the Crimea.

The measure of our advance is given by comparing this method with the local modern Red Cross supply depôt, where the work is done under aseptic conditions, and all dressings are sterilized before being sent out to the front.

The army diagnosis of "G.S.W." (gunshot wound) covers most of the cases we are called on to treat, and includes injuries by all kinds of modern projectile. So far as I know, very few cases of bayonet wounds have been admitted for treatment. The reason for this is that those wounds are so often immediately fatal, as the points aimed at are the eye, the throat, the chest, and the abdomen. The modern bullet, conical in shape and consisting of a lead core encased in harder metal, may become lodged in the tissues as a whole, or, splitting in pieces, it may scatter fragments of metal through the tissues. Fired at a moderate range, it may have an explosive effect—that is, after making a small entrance wound, it may shatter the tissues in all directions and make a large exit wound. Shrapnel bullets—round lead balls of varying sizes—make a larger entrance wound, but do not do so much damage internally, as their propulsive force is not so great. As might be expected, rifle bullet wounds are common in the head, shoulders, and arm, from exposure of those parts in firing from cover. Shrapnel wounds, on the other hand, are often multiple on the head and neck, for the shrapnel shell bursting in the air showers its bullets on the head of the soldier in the trench, or on his back, if he is lying in the open taking cover.

High explosive shells rely for their lethal effect on the concussion of the explosion and the scattering of irregular pieces of metal which cause severe lacerated wounds. Every soldier carries in the lining of his tunic an emergency dressing which consists of two packets each containing sterilized gauze in waterproof. That this dressing is of use is proved by the fact that when applied promptly cases may heal up practically by first intention. If the bullet has not carried infection into the wounds the pads prevent subsequent contamination.

Cases are sent as rapidly as possible to the casualty clearing station at the nearest railhead. We have had cases at the military hospital here well within two days of being wounded in Flanders. The reason for this rapid removal is the necessity of clearing hospitals in France during heavy fighting. No one can tell how many casualties are coming in, and accommodation must be kept for cases which cannot be passed on, either from the fact that operative interference is required, or that the injury is too grave to admit of removal. The maintenance of a large body of wounded with the necessary attendance in France, is, of course, a difficult matter.

On admission to hospital in this country, the one fact obvious is, that these patients are exhausted and short of sleep. Warm and comfortable in their unaccustomed beds they sleep more or less for two or three days. After a life of anxiety in the trenches comes the excitement of battle, with the shock and pain of the wound, followed by a more or less exhausting journey. Unless absolutely necessary, operative interference is best deferred until they have fully recovered from this state of exhaustion. These men, however, do well—better than could be expected from the nature of the wounds received. It has to be remembered that they were in good health on enlistment, and that their physical health has been improved by the subsequent military training. They were in the best possible condition when they reached the firing line, and despite many drawbacks they are there fed better, and their sanitary surroundings are better supervised than in almost any previous campaign. In addition to this a severe wound or the loss of a limb is unable to upset the cheerful optimism of the average British soldier of the present day. These facts, then, all tend towards good recovery when we get them safe in hospital in this country.

Wounds.

We all know that in civil practice the future of an injury, such as a scalp wound, depends almost entirely on the treatment received in the first few hours. Hence we find in war work that suitable gunshot wounds, when seen early, have their track excised and disinfected, and the wound stitched up. Many such cases heal up by first intention, thus greatly shortening convalescence. In the majority of cases this method is impossible, owing to the

* A paper read at a meeting of the Staffordshire Branch of the British Medical Association.

extent and severity of the wound, and the firm hold sepsis has on the tissues, before the opportunity of treatment occurs. Thus we find that a more or less lacerated wound is the type we have to treat, while either at the moment of infliction the projectile has carried germs into the depth of the wound, or from the length of exposure sepsis is well established. The bacteria have plenty of time to invade the deeper layers of the tissue of the wound before systematic treatment can be commenced. This accounts for the difficulty in treatment, for antiseptics cannot be expected to penetrate the tissues so as to kill the germs and not the tissues themselves. When the wounds of a convoy smell badly on admission, when first dressed, it is certain some of the cases are serious; high temperatures will be common, secondary haemorrhage will occur, and there may be some deaths from the severity of the septic infection. These features were marked in a convoy of wounded Australians. These big well-built men did not stand septic infection nearly so well as the average English soldier. It seemed as if another factor were at work, which may have been the change from the sunny colonial life to the damp and confined trenches. This would tend to lower their resistance to the pathogenic germs encountered there among inferior hygienic surroundings. The important part of the treatment of those wounds is to encourage free discharge and to provide free drainage. With this end in view Sir Almroth Wright's method of using salt solution is of great value. He found that 2 per cent. will begin to inhibit and 5 per cent. completely arrest the growth of pyogenic organisms. Sodium citrate is added to prevent the lymph coagulating. The practical rule is to use sodium citrate when the discharge is being confined by a dressing, and to omit it as unnecessary when washing away the pus. This is obtained by continuous irrigation by gauze wicks coming from a flask of salt solution or from rubber tubing, with the flow regulated by clips. The effect of this is to wash away all discharge as it is formed and to encourage the flow of lymph outwards through the wound. An unhealthy sloughy wound, with thin irritating discharge quickly improves. The sloughs separate, red florid granulations form, and the discharge becomes what was called in former days healthy laudable pus.

There is another method of employing this treatment. Under an anaesthetic the wound is opened freely and cleansed. It is then covered with a layer of gauze and tablets of sodium chloride inserted; these are covered with gauze and more tablets used. This is repeated until the wound is filled up, when the surface is covered with gauze and a bandage applied. The great advantage is that the wound does not require dressing for several days, thus saving the patient much pain. The discharge from these wounds smells badly, and soon soils the superficial dressing. This can be changed if necessary, but in this instance it does not mean that the wound is going wrong. The best indication for the renewal of the deeper dressing is quickening of the pulse.

The most commonly used routine dressing for superficial septic wounds is an aseptic fomentation of saline solution, or some antiseptic in weak solutions. These fomentations should be changed frequently. Wounds of the limbs improve rapidly on immersion in baths of similar solutions. Dakin's solution or some modification is most efficacious in cleaning offensive wounds.

A septic wound with a dry gauze dressing which is not frequently changed soon goes wrong. The first discharge cakes on the gauze, and the next accumulates underneath, giving rise to a smell. A patient with an extensive wound of the soft parts ought certainly to have a splint applied, as movement tends to spread deep-seated suppuration, and to cause autoinfection.

As regards drainage, when a wound is found to extend into the deeper tissues, each track must be opened up freely under an anaesthetic. This usually causes a rise of temperature from septic absorption by the freshly-cut tissues, but the temperature soon drops, and no harm is done. Drainage tubes should be of large calibre, with frequent holes cut in them. Tubes should not touch any blood vessel, owing to the risk of causing secondary haemorrhage, nor should they touch the bone in cases of compound fracture, from the additional risk of necrosis. They should not be inserted far into the joints, but only down to the capsule, as otherwise they increase the injury to the inflamed synovial membrane.

Gauze plugging tends to pen up the discharge and cause extension of suppuration in the depths of the wound. When the patient is travelling, and changes hands, it is quite easy for the plug to slip inside the wound and be overlooked at the next dressing and so act as a very septic foreign body.

Each wounded man receives a prophylactic injection of antitetanic serum before being sent home, and this largely diminishes the number of cases of tetanus. If any suspicious symptoms of this dread disease occur the prompt and repeated intraspinal injection of the serum is most important. When this is done the foot of the bed should be raised to allow of the upward spread of the serum to the cervical portion of the cord.

Gangrene may develop in a wound which is not drained properly. The freest possible incisions with the largest drainage tube and the liberal local use of oxygen may fail to arrest its spread. The guillotine amputation may offer the only hope, and this may not be feasible from the locality of the wound. Indeed, the rapid onset and quick death of a patient in a severe case of gas gangrene has to be seen to be believed.

Secondary haemorrhage occurs in septic wounds from ulceration of the blood vessels, and is prevented by the free drainage which should be provided in all cases. If plugging the wound fails to arrest the haemorrhage, or if the bleeding point cannot be secured in the wound, then the main artery should be tied at a distance. If the haemorrhage recurs, then amputation must not be delayed until the man is too weak to stand it. These points were well illustrated by one of my cases with a gunshot wound of the middle of the thigh. The wound was opened and drained on admission, and at the first haemorrhage it was again opened up and the artery secured in the wound. Haemorrhage recurred, and the common femoral was ligatured. A week afterwards there was another haemorrhage and the man was beginning to get dangerously weak and anaemic. A circular amputation was done above the original wound and the man recovered; he would have died from another haemorrhage.

Amputations.

It has been said that under war conditions a limb requiring amputation is one in which, from the nature of the injury and length of exposure, sepsis had travelled beyond the limits of the original trauma. For this reason flap amputations do badly, and the guillotine method is the best. Here there is circular division of the skin, muscle and bone at one level, thus leaving an open raw stump. In one convoy four flap amputations were admitted under my care with gangrenous flaps and sloughy wounds. Two were amputations in the middle of the humerus, and both died from acute sepsis, despite all treatment; the other two cases were flap amputations with disarticulation at the knee-joint. In each of these cases the articular end of the femur was exposed, surrounded by a sloughing wound, cellulitis extended up the thigh, and in one case secondary haemorrhage occurred from the popliteal artery. In both there was a long dangerous illness before re-amputation could be done, but both eventually recovered.

The guillotine method allows the freest possible drainage from the infected limb, and this is the secret of its success. Subsequently the stump may be skin-grafted, or the tissues brought down over the end of the bone by plaster extension, but in most cases re-amputation has to be done. By this time, of course, the patient's general condition has improved, the limb is free from sepsis, and a secondary amputation is undertaken under very favourable circumstances, giving a good firm stump.

Fractures.

This war has seen the increased use of the different forms of wire splinting associated with the names of Thomas and Robert Jones. These splints are light but rigid, permit of easy access for dressing wounds, and extension is easily arranged either for the arm or the leg.

A septic compound fracture heals slowly; indeed, a long critical illness may result in saving a limb which is of little after-use to the patient. In many cases early amputation would save much suffering, and the modern efficient artificial limb be of more service than the limb which is saved.

Every effort is made to retain fragments of bone at the seat of a compound fracture, as, if necrosis can be avoided, these fragments play an important part in the subsequent union of the bone. Plating a fracture is out of the question until the wound is healed, and even then must be delayed some time until the health of the patient has improved and there is less risk of operation stirring up a quiescent local septic focus. Fragments of metal in the bone are no detriment to plating so long as they are causing no irritation. In one case of non-union of a fractured radius, with the bone freely peppered with fragments of shrapnel, the bone was plated and the shrapnel left undisturbed; the result of the operation was good.

Head Injuries.

We have had sent us several most successful cases after the prompt trephining of depressed fracture of the vault of the skull, mostly caused by gunshot wound. As we get them there is a horseshoe incision in the scalp which is nearly healed, and under this can be felt the gap left by the removal of bone. These cases have no further symptoms, and require no further surgical treatment. They are fitted with an aluminium plate, held in position by elastic bands round the head, and are then discharged from the service.

Chest Wounds.

When a bullet wound of the chest is received, the patient should at once lie down, as any further exertion or movement increases the haemorrhage to a marked degree. The danger is, a man hardly knows he is hit, and goes on until forced to give up from extreme dyspnoea, due to a large haemorrhage into the pleura. Unless there are urgent symptoms, the chest should not be tapped, as septic infection easily occurs in these cases. Prolonged rest in bed, with strapping of the affected side, and potassium iodide internally, cause the effusion to absorb satisfactorily. If pus is found in the chest, then resection of a piece of rib, with a short but large tube inserted at the lowest border of the empyema, gives good results, and recovery is excellent. One typical case was a private, who had lain for four days on a stretcher, after receiving a perforating gunshot wound of the left chest. To relieve the dyspnoea an incision had been made in the intercostal space and 50 oz. of blood-stained fluid evacuated. On admission here he was dangerously ill; his heart was displaced over the right mammary region, there was an incision at the base of the left lung discharging offensive fluid, and he had a large bedsore over the sacrum. When he had sufficiently recovered, the chest was opened and drained on the above lines. The patient soon picked up, and, when last heard of, he was back with his regiment again.

Foreign Bodies.

Small fragments of metal under the skin can be removed under a local anaesthetic, but irregular pieces may be found firmly held by the subcutaneous tissues, and are difficult to extract. Deep-seated fragments causing no trouble, are, of course, left alone, and, unless very accurately localized by the *x* ray, are difficult to find; any attempt to grope for such a fragment is a difficult business, very likely to fail.

Conclusion.

The war has certainly altered our ideas of the transport of the sick and wounded in this district. The admirable voluntary organizations which perform these duties are worthy of every praise, and we must see to it, in peace time, that the sick and injured of civil life shall have the same prompt and efficient ambulance facilities available, such as the soldiers now have when sent to the Stoke War Hospital.

SINCE the outbreak of the war a scheme for the manufacture of aniline products on a large scale in Italy has been under consideration with the object of freeing the industry of that country from the domination of German enterprise. The Industria Nazionale de Anilina has now been formed at Milan with a capital of £240,000. The initiators, Senator Luigi Della Torre and Signor Aldo Venezini, have secured the co-operation of Professor Ciamician, Senator of the Kingdom of Italy.

THE NEW DIETETIC TREATMENT OF DIABETES MELLITUS.*

BY P. J. CAMMIDGE, M.D.LOND.

I DO not propose to deal with the practical details of Allen's method, as they are probably familiar, but shall devote my attention chiefly to the metabolic changes produced by the treatment, and its effect on different types of diabetes. The condition to which the name diabetes is applied occurs in a variety of forms with the one symptom of glycosuria in common, but differing in other respects. This variation is even more marked when the blood, urine, and faeces from a number of cases are systematically examined. During the last few years I have had the opportunity of analysing some eight thousand specimens from over five hundred cases of diabetes, including fifty-four I have treated by Allen's method. One of the most striking results has been the frequency with which indications of chronic catarrh of the upper intestinal tract were found (71 per cent.). It can hardly be assumed that the relation is accidental or that the catarrh is a secondary phenomenon, for the history shows that symptoms of indigestion have frequently preceded the discovery of sugar by several years. Cases of this description generally respond well to "alimentary rest," but they are apt to relapse unless the intestinal condition is considered in planning the subsequent treatment.

Although one can imagine that impairment of the functions of the pancreas is responsible to some extent for the imperfect carbohydrate metabolism in these cases, and that physiological rest of the gland will therefore bring about an improvement, we should not overlook the effect of starvation on the intestine itself. It may be partly a de-intoxicating process, as Guelpa supposed, but as Lombroso has shown that the intestine yields a glycolytic agent to the blood even more readily than the pancreas, it is possible that the physiological rest may influence the production of this substance and so control the glycosuria. The analogy between the diabetes produced in animals by partial extirpation of the pancreas and in the human subject is probably not as close, in this type of case at least, as some have imagined, since, on the one hand, we are dealing with a surgical mutilation of a non-progressive character, whereas on the other we have to treat a pathological state that tends to progress, and, even when checked, to recur.

It is comparatively uncommon, in my experience, to find evidence of advanced cirrhosis of the pancreas in diabetics, but signs of some interference with the digestive functions of the gland were met with in 72 per cent. of my cases. In most of them (67 per cent.) there were also indications that the functions of the liver were being imperfectly carried out, while in 27 per cent. the hepatic disturbance was more pronounced apparently than the pancreatic. It is convenient, therefore, to recognize three types: (1) the pancreatic, (2) the hepatic, and (3) the pancreo-hepatic—a classification I find of help in prognosis and treatment.

The outlook for patients with a cirrhotic pancreas is fairly good, provided a suitable diet is adopted. I have not found that they are materially benefited by starvation, and as their digestive powers for all three classes of foodstuffs are defective it is more important to ensure adequate nourishment than to worry over the traces of sugar they generally pass.

Strictly speaking, the hepatic type does not come under the heading of diabetes, for although a reducing substance is passed in the urine it is not a sugar, but an alpha-ketonic acid, to which I have given the name pseudo-laevulose, as it is laevo-rotatory, like laevulose. Pseudo-laevulose is met with in the urine of most advanced cases of diabetes, along with dextrose, especially if the diet contains much protein, and it is from protein that it is probably formed; but it also occurs alone, and may lead to an incorrect diagnosis of diabetes. To treat such cases on orthodox lines is a waste of time and may do more harm than good. A carbohydrate-free diet only makes matters worse. Although starvation will clear the urine of "sugar," the same result may be obtained, with greater comfort to the patient, by eliminating proteins from the

* Abstract of a lecture given before the Harveian Society on April 19th, 1917.

diet, or greatly reducing the intake. An abundance of green vegetables, with dextrinized starches or pure dextrose, is the best diet for a time; later other foods can be cautiously added if proteins are taken sparingly. The prognosis appears to be good, for I have several patients who have remained sugar-free and in good health for three or four years. It seems probable that some of the success of the various "carbohydrate cures" for diabetes is to be explained by cases of this kind.

What I have termed the pancreo-hepatic type is probably one development of the intestinal type. There may or may not be evidence of intestinal catarrh when the patients come under observation, but they show signs of pancreatic insufficiency and more or less disturbance of the functions of the liver. The prognosis is most hopeful when hepatic insufficiency is the more pronounced feature. These cases correspond to what has been termed "gouty" glycosuria. Typical attacks of gout are rare, but there is a special liability to cardio-vascular and kidney disturbances, cataract, neuralgia, and neuritis. Striking variations in the excretion of uric acid, creatinine, and amino acids are generally found, and pseudo-laevulose sometimes constitutes more than half the total "sugar." Signs of chronic colitis are common in the faeces.

The nervous complications are commonly regarded as resulting from the gout, but they really arise from the hyperglycaemia, and so long as this is not controlled they persist. A short period of starvation is often helpful, but satisfactory results can be obtained by limiting the protein and carbohydrate intake for several days, then giving one or two vegetable days, followed occasionally by a porridge or potato day. The subsequent diet is arranged according to the patient's tolerance for protein and carbohydrate, care being taken, however, to limit the purin as much as possible. If the gouty and diabetic symptoms are both severe an alternating diet, calculated to control each in turn, is advisable. Typical "gouty" glycosuria is most common after middle life, but even in younger people a predominance of the signs of hepatic insufficiency warrants a more cheerful outlook than when they are absent. In these, as in the typical gouty cases, there is a marked tendency for the hyperglycaemia to persist for a considerable time after the urine has become sugar-free; and unless this is borne in mind, and the urinary analyses are controlled by blood-sugar estimations, the results of treatment are very likely to be disappointing, for our aim in all cases of diabetes should be to prevent hyperglycaemia, not merely to eliminate sugar from the urine. So long as blood-sugar estimations were difficult to carry out there was a valid excuse for relying entirely on the indications afforded by the urine, but the modern micro-chemical analysis is so readily performed that we should not be content with the shadow, but grasp at the substance.

A nervous element enters into many cases of diabetes, no doubt, but it is rarely possible to prove it. I think that the relation between the magnesium and calcium output in the urine may possibly afford some indication, for I have found that the former is usually higher than the latter in nervous people, and that a sudden rise in the magnesium, with little or no change in the calcium, occurs as the result of worry, anger, grief, etc. Cases in which a nervous factor enters into the pathology answer well to treatment by alimentary rest, but always do best when treated away from home and their ordinary surroundings. I give these patients as much fresh green vegetable as possible to supply them with an abundance of inorganic salts, and I find that minute doses of magnesium sulphate, taking care to avoid a purgative effect, improve their mental condition, and tend to control the glycosuria.

It will have been gathered that I do not look upon Allen's fasting treatment as the bes tfor all forms of glycosuria, but I do consider that it marks a great advance in the available methods, and gives results that can be obtained by no other means in many instances. It must be used with judgement, however, and one should always bear in mind that the keynote of the treatment is undernutrition. A practical question that sometimes arises, therefore, is whether a controlled, and may be mild, glycosuria with an adequate diet and reasonable enjoyment of life is not preferable to the theoretical ideal of a permanently sugar-free urine, which can only be secured by a diet that will not satisfy the pangs of hunger, and requires constant close supervision. The answer will depend on circumstances and the temperament of the patient. These should be considered carefully before advising the treatment, as once it is begun it must be persevered with, since a return to an ordinary carbohydrate-free diet always brings about a rapid increase in the acidosis, with excessive tissue waste and death from diabetic coma.

Coma, formerly one of the most common causes of death in diabetes, should now be one of the rarest, for in starvation, followed by a largely vegetable diet, we have a powerful weapon for controlling the acidosis from which it arises. Essentially acidosis results from the imperfect oxidation of fat, and this in its turn is dependent upon faulty combustion of carbohydrate by the tissues, for fat seems to be a less readily oxidized foodstuff than sugar, and needs the fire of burning sugar to bring about its complete combustion. It has been calculated that one part of dextrose to three parts of higher fatty acids is required for the purpose. Since the maximum rate at which dextrose can be oxidized by diabetics is always lower than in health the diabetic is not capable of utilizing as much fat as a normal individual, so that acidosis is more prone to develop, the fat smokes, as it were, the "smoke" being represented by abnormal acid products. In order to check a diabetic acidosis it is necessary to prevent "smoking" of the fat by restoring the proper relation of dextrose to fatty acid oxidation, which may be done by increasing the utilization of carbohydrates and diminishing the fat. Starvation will obviously accomplish the latter and tends to increase carbohydrate tolerance. The immediate effect of the fasting treatment will depend upon the amount of fat stored in the body, and therefore upon the nature of the previous diet. If much fat has been taken and there is a considerable deposit of adipose tissue the sugar available may be quite inadequate for its complete combustion and there will be a rapid rise in the acidosis until the fat has been used up and a more normal relation between fatty acids and dextrose has been reached, but even then the acidosis may continue, for proteins contain fatty acid radicals yielding acid bodies when they are imperfectly oxidized, and some diabetics have lost the power of utilizing the dextrose contained in the protein molecule which normally suffices for their complete combustion. By persisting with the starvation, however, the ability of the organism to utilize carbohydrate usually becomes so far restored that enough is available to control the formation of abnormal acid end-products from both sources. Every case cannot be expected to react to starvation in the same way, the determining factors being the amount of stored fat, the power to utilize the carbohydrate stored in the form of glycogen, and the extent to which sugar of protein origin can be made use of. Consequently three practical deductions may be drawn: (1) There is more danger of serious acidosis during the starvation of fat than thin diabetics; (2) when acidosis is present the patient should be prepared for starvation by a fat-free, protein poor, diet for several days; (3) an initial increase in the acidosis is to be expected in most cases, but should not put a stop to the treatment unless it assumes threatening proportions. When this occurs the fast should be terminated for the time being and the treatment directed to the acidosis. A restricted diet and alkaline therapy for a few days will generally serve to control the condition, when a further fast will usually result in improvement in carbohydrate metabolism without increasing the acidosis.

During the fasting period as much exercise as practicable should be taken, as it shortens the duration of the fast. After feeding is commenced the exercise should be continued, short periods of vigorous exercise after meals being preferable to long walks. Excessive fatigue should be avoided. Mental occupation is also most desirable, and patients should be encouraged to continue, or resume, their ordinary work if possible.

Between 1912 and 1915 I published a series of articles, pointing out that a quantitative regulation of the diet is required in all cases of glycosuria, and that control of the protein intake is quite as necessary as adjustment of the carbohydrate allowance, for analyses of the excreta in my cases had shown that merely to eliminate sugar from the urine does not suffice to control the disease if the patient is not at the same time placed in nitrogenous equilibrium. This can only be ensured by teaching him to take his diet quantitatively. It is gratifying to find that my conclusions are important features of Allen's treat-

ment, but I am sorry to see that in an attempt to simplify it an empirical method of attempting to establish nitrogenous equilibrium has been generally adopted. Daily analysis of the urine during the fasting period shows that, coincident with the fall in the sugar excretion, there is a drop in the whole level of metabolism, the total nitrogen sinking until it stands at a steady level of 4 or 5 grams a day. At first there may be a rise in the output of uric acid and creatinine, but as the fasting proceeds they also sink, and the same is true of the amino acids. When protein is added to the diet the excretion of these substances rises again until a level is reached at which the total nitrogen of the urine, *plus* 1 gram to allow for the loss in the faeces, balances the nitrogen content of the diet. If the protein intake is maintained at about this amount the patient remains in nitrogenous equilibrium, but if more protein is given evidences of a disturbance of nitrogenous metabolism shortly appear, and ultimately sugar is passed in the urine. Merely to rely upon the appearance of glycosuria is therefore far from being an ideal method of regulating the protein intake, and I have found the adoption of a fixed figure governed by the weight equally unsatisfactory in many instances. Estimation of the carbohydrate tolerance presents no great difficulty, especially if analysis of the urine is controlled by determinations of the sugar content of the blood. When treating children it is important to remember, however, that the diet, both as regards protein and carbohydrate, should not be increased at the same rate as for adults, 1 gram of carbohydrate for a child of 1 kilograms, for instance, being about equal to 4 grams for an adult.

Regulation of the fat intake requires more care than is frequently given to it. Fat is generally regarded as a make-weight by which the caloric value of the diet can be adjusted to the theoretical requirement worked out from the patient's weight, but modern research suggests that a carefully adjusted fat supply is as important as a correctly arranged intake of protein and carbohydrate. Bloor has shown that abnormal lipoid values in the blood are common in diabetes, apart from obvious lipaemia, especially in severe and chronic cases, and that these lipoids originate from the fat of the food. Increase in the latter involves, therefore, the overloading of an already defective mechanism, whereas fasting, or a reduced fat supply, removes the excess of lipoids and leads to more efficient fat metabolism. There does not appear, however, to be any definite relation between the lipoid content of the blood and the appearance of acetone bodies in the urine.

The importance of not commencing the fast in severe cases with acidosis until the patient has been kept for a few days on a fat-free diet, poor in protein, has been referred to, and it is equally important that fat should not be added to the diet subsequently until a considerable carbohydrate and protein tolerance has been established. A creamy blood, an increase in the ketonuria, and the appearance of glycosuria should be controlled by reducing the fat, otherwise it is best to regulate the diet so that a progressive loss in weight is prevented, while a gain, or more correctly an increase in adipose tissue, is avoided.

At regular intervals the whole level of the diet should be materially reduced to avoid overtaxing the defective metabolic functions of the patient. The extent and frequency of the reduction varies with the severity of the case, so that no hard and fast rules should be laid down, but generally one half the usual diet for one day a week is sufficient. In some cases this means that the patient must fast, in others he is limited to low-value green vegetables with two or three eggs, while in others a fair amount of carbohydrate can be taken, provided that the protein and fat are kept low. When carbohydrate tolerance is very defective it is necessary to prescribe one or two vegetable days each week in addition. As the patient improves, more carbohydrate is gradually added to the diet, and the stringency of the fast or semi-fast days is reduced, but progress should be very slow, with sufficient interval between each advance to test thoroughly his powers of dealing with the larger ration. No addition should be made to the protein until all traces of acetone have been absent for some weeks, and there is no evidence of abnormal tissue waste, even then it should be increased very slowly, guided by the nitrogen output in the urine. Most diabetic foods, if not fraudulent as regards their carbohydrate content, consist chiefly of protein, and must therefore be allowed for in calculating the protein allowance.

Management of the diet is at present our only reliable means for combating diabetes, but it is probable that other methods will be discovered. The recent work of Murlin, Kramer, and others opens a new field in this connexion. Experiment has shown that the mechanism regulating the level of the blood sugar is peculiarly sensitive to disturbances in the acid-base equilibrium of the body, acid production leading to hyperglycaemia, while alkalosis exerts an influence in the opposite direction. Applying this idea, Murlin and Kramer, and more recently Underhill, have reported considerable improvement in cases of glycosuria subjected to careful alkaline therapy. The former used normal sodium carbonate given intraduodenally in 1 per cent. solution. Underhill employed large doses of sodium bicarbonate given by the mouth. Since meats and cereals are in general acid-producing foodstuffs, while vegetables and fruits usually yield an excess of bases, a diet rich in the former will tend to raise the sugar content of the blood, whereas a vegetable diet will lower it. May this not be one of the reasons why the largely vegetable diet given after the fast in the alimentary rest treatment is associated with an increase in carbohydrate tolerance, and partly explain the deleterious effect of more protein than is needed to make good the actual wear and tear of the body?

THE VARIATIONS IN WEIGHT OF THE TUBERCULOUS UNDER SANATORIUM TREATMENT.

BY J. HENDERSON SMITH, M.B., CH.B.

THROUGH the courtesy of Dr. S. Vere Pearson I recently had the opportunity of examining the record of weights kept at Mundesley Sanatorium, and an analysis of the six years 1909–14 has given the results here set forth.

The patients at Mundesley are all tuberculous. A few cases are included where the lung symptoms are of subordinate importance, such as laryngitis or peritonitis, but the overwhelming majority are definite pulmonary cases. All stages of the disease are represented and no attempt has been made here to subdivide them into groups. Patients are weighed at regular weekly intervals on getting out of bed, and care is taken that the weight of the clothes does not vary. The weighing is done to a quarter of a pound, the machines are inspected and tested regularly, and there is no reason to doubt that the record is substantially accurate.

In such a place as a sanatorium, where full nourishment is insisted on and where so many of the patients arrive far under their proper weight, we should expect the weekly observations to show on the whole an increase in weight. And this is in fact the case. Each week no doubt some of the patients may lose in weight or remain stationary, but taking all the patients together we find that usually the gains exceed the losses, and there is on the average a net increase per patient per week. In 285 out of 312 weeks there was a gain in weight and in only 27 a loss, the weekly average varying from a gain of over 1.4 lb. per patient to a loss of over 0.4 lb. (See Table I,

TABLE I.—*Showing the Average Weekly Gain or Loss per Patient in 312 Consecutive Weeks.*

			Net Loss.			
In 2	weeks	...	more than .4,	not more	than .5	lb.
3	,,	...	,, .3	,,	,, .4	lb.
7	,,	...	,, .2	,,	,, .3	lb.
5	,,	...	,, .1	,,	,, .2	lb.
10	,,	...	,, 0	,,	,, .1	lb.
			Net Gain.			
In 22	weeks	...	more than 0,	not more	than .1	lb.
20	,,	...	,, .1	,,	,, .2	lb.
26	,,	...	,, .2	,,	,, .3	lb.
34	,,	...	,, .3	,,	,, .4	lb.
28	,,	...	,, .4	,,	,, .5	lb.
34	,,	...	,, .5	,,	,, .6	lb.
35	,,	...	,, .6	,,	,, .7	lb.
32	,,	...	,, .7	,,	,, .8	lb.
17	,,	...	,, .8	,,	,, .9	lb.
12	,,	...	,, .9	,,	,, 1.0	lb.
13	,,	...	,, 1.0	,,	,, 1.1	lb.
4	,,	...	,, 1.1	,,	,, 1.2	lb.
5	,,	...	,, 1.2	,,	,, 1.3	lb.
2	,,	...	,, 1.3	,,	,, 1.4	lb.
1	,,	...	,, 1.4	,,	,, 1.5	lb.

where a summary is given of the average net results during the six years under examination.) The range of variation is considerable, and it is remarkable how some weeks are good weighing weeks and others bad. In some, all, or nearly all, the patients gain weight; in others, no one gains much, and the majority lose. This is sometimes very striking indeed. For example, in the Mundesley figures in July to September, 1909, in the middle of a run of low weeks in which over half the patients failed to gain there came a week in which 96 per cent. did not lose, and there was an average net gain of over 1 lb. per patient. Again, in October of the same year a bad week with an average loss of 0.37 lb. is interposed between weeks with a gain of over 0.7 lb. Variations of this kind where there is a sudden change in the character of the week affecting most of the patients simultaneously may be simply chance happenings, but they at least suggest that some outside factor is affecting the results. The most obvious factor of the kind is meteorological influence, and later on the question is discussed whether there is any evidence for such a supposition.

The frequency with which the different individual changes occur is given in Table II for over 7,000 consecutive observations, and these plotted at half-pound intervals give a fairly smooth, slightly skew curve. Taken together, there are 4,261 observations of gain in weight with a total of 5,485 lb., 722 without change, and 2,084 observations of loss totalling 1,976½ lb. Over the whole 7,067 observations there is an average net gain of 0.496 lb.—that is, every patient gained on the average about half a pound for each week of his stay in the sanatorium—an excellent result. Here again the individual variations are large—from the three patients who each put on half a stone or more in a single week to the five who lost five or more pounds in the same period. The largest increases are recorded during the first two or three weeks of the patient's stay, as one might expect from the often emaciated condition of new arrivals. The average increase of all patients during their first week's stay was 1.40 lb., during the first four weeks 1.09 lb. per week, during the fifth week 0.75 lb., and during the ninth to the twelfth weeks 0.42 lb. per week.

TABLE II.—*Showing the Frequency of the Various Average Weekly Gains and Losses.*

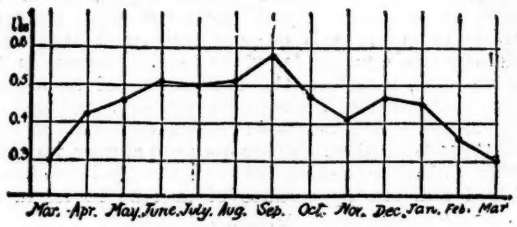
	No. of times a loss occurred.		No. of times a gain occurred.
A loss of 5½ lb.	...	A gain of 0½ lb.	... 625
,, 5	... 1	,, 0¾	... 577
,, 5½	... 1	,, 0½	... 562
,, 5	... 2	,, 1	... 536
,, 4½	... 2	,, 1¼	... 410
,, 4¼	... 2	,, 1½	... 338
,, 4¼	... 1	,, 1¾	... 268
,, 4	... 3	,, 2	... 235
,, 3¾	... 1	,, 2¼	... 156
,, 3½	... 11	,, 2½	... 162
,, 3¼	... 9	,, 2¾	... 89
,, 3	... 25	,, 3	... 78
,, 2¾	... 20	,, 3¼	... 59
,, 2½	... 41	,, 3½	... 41
,, 2¼	... 46	,, 3¾	... 29
,, 2	... 81	,, 4	... 27
,, 1¾	... 74	,, 4¼	... 19
,, 1½	... 121	,, 4½	... 13
,, 1¼	... 160	,, 4¾	... 11
,, 1	... 286	,, 5	... 13
,, 0¾	... 308	,, 5¼	... 1
,, 0½	... 383	,, 5½	... 3
,, 0¼	... 505	,, 5¾	... 2
		,, 6	... 1
		,, 6¼	... 1
		,, 6½	... 2
No change occurred 722 times		,, 6¾	... 0
		,, 7	... 1
		,, 7¼	... 1
		,, 7½	... 1
			7,067

When the observations of the six years are arranged under the months in which they occur, it becomes evident that there is a well-marked seasonal variation in the weight increase. There are six months in which the increase is greater than the general average of 0.49 lb., and these six months run consecutively from May to October (see Table III). Plotted as a graph the figures give a curve rising to a maximum of 0.62 lb. in summer and then falling fairly regularly to a minimum of 0.31 in February. But there is a possible fallacy which we must consider before we can accept this as a correct representation of the facts. We have seen that during the early weeks of a patient's stay he puts on weight more rapidly than in the later weeks. If in the summer months the number of patients coming

TABLE III.—*Showing the Average Weekly Gain per Patient for each Month (A) when all Observations are included; (B) after deducting the "Early Observations" of the First Four Weeks of Stay; (C) after bringing the Early Observations to a Constant Proportion.*

	A.	B.	C.
January	.44	.28	.45
February	.31	.16	.36
March	.33	.12	.30
April	.37	.24	.42
May	.58	.29	.46
June	.62	.34	.51
July	.54	.33	.50
August	.53	.35	.51
September	.55	.42	.58
October	.49	.30	.47
November	.46	.22	.41
December	.44	.30	.47

to the sanatorium is larger in proportion to the total number of patients than it is in the winter months, the average gain will be greater, and the rise in the curve may be due solely to this cause, and not to any real increase in the weights. And it is the case that there are more arrivals in the summer than in the winter. If we take the first four weeks of stay as "early weeks," there are during May to October more than twice as many observations belonging to the early weeks, as in the November to April period, and the early observations in the summer period form 25 per cent. of all the observations in the period as against 16 per cent. in the winter period. More new patients arrived at the sanatorium in each of the months May, June, July and August than in any other month of the year. This, however, is not the true explanation of the rise in summer. If we deduct from the total observations during each month all the "early" observations, and plot the result, the curve still shows the marked rise of summer; and if we bring the early observations to a constant proportion—namely, 20 per cent. in each month—we get a more accurate representation of the actual weight variations than is obtained from the uncorrected figures. This is shown in Curve 1. The



CURVE 1.—The average weekly increase in weight per patient during each month of the year.

graph rises steadily from March to reach a maximum in September, and then falls again to reach its lowest points in February and March. There is a high level of weight increase all through the summer, culminating in the early autumn, and a lower level throughout all the months of winter and early spring.

So marked a seasonal variation suggests climatic or meteorological influence, and it became a matter of interest to see whether the weights varied either directly or inversely as the elements of the weather, or any one of them in particular. For this purpose the available data for the whole eastern district of England, and also for the single neighbouring district of Cromer, were extracted from the records of the Meteorological Office for these six years; and use was also made of the published figures giving a twenty to thirty-five years' average. A close correspondence was perhaps not to be expected; certainly none was found.

The amount of sunshine in this area is least in December, and increases steadily to reach a maximum in May, falling fairly steadily to December again. The temperature curve rises to a maximum in July and August, and falls smoothly to a minimum in January. The rainfall is least in February and increases steadily, with a break in September, to a maximum in October; January, February, and March being the months with least precipitation. The rainfall for 1909–1914 departs from this, which is the general rule, by rising to a very high maximum in December owing to exceptionally heavy precipitation at the end of the year in four out of the six years. December, 1909, and December, 1910, had both exceptionally high rainfalls, over 3.75 in., with the very small weight

averages of 0.18 and 0.0 lb., and December, 1914, with 5.75 in., and August, 1912, with over 7 in. the unusually high weights of 0.60 and 0.69 lb. The relative humidity curve is very different from the weight curve, and the absolute water-content of the air shows a curve which agrees closely with the curve of temperature. No special influence of the south-west or other wind or of any other element could be discovered.

There is, then, no close agreement with any of the meteorological curves, whether these be plotted from a twenty to thirty-five years' average or only for the six years 1909–1914, and whether the figures be taken for the whole eastern district of England or for the neighbouring district of Cromer only. There is undeniably a general agreement. The six months from May to October, which are the months of greatest weight, are also the months of greatest water-content, most sunshine and highest temperature, as well as of greatest rainfall on the thirty-five years' average. But one cannot demonstrate a closer relationship than this, and what there is can scarcely be held to establish a direct causal connexion.

It still seemed possible that the sudden weekly variations to which reference was made above might be traced to weather conditions, and there is some theoretical ground for imagining that this might be the case. Exhaled air is approximately saturated with water vapour at the body temperature—that is, it holds about 19 grains of water per 1 cubic foot. At rest a man may be taken as breathing 1 cubic foot every four minutes, or over 6,500 grains in twenty-four hours, and during periods of exercise the rate may increase to as much as 1 cubic foot every thirty to sixty seconds.[1] Under ordinary conditions external air does not contain nearly so much water as 19 grains, and the difference is supplied from the body. Thus at 60° F. the air, even if saturated, contains only about 5.7 grains per cubic foot, and the body must find 13 grains every four minutes, or over 4,500 grains of water every twenty-four hours. The less the air approaches saturation the larger the quantity of water exhaled that has to be found—for example, with a temperature of 60° F. dry and 55° F. wet bulb the body must supply about 15 grains to each cubic foot, and over 5,000 grains every twenty-four hours. With an external temperature of 37° F. and a saturation of 90 per cent., such as is not uncommon in January, the air contains only about 2.25 grains per cubic foot, and 6,000 grains (0.85 lb.) must be added to saturate at body temperature the air exhaled in twenty-four hours.

No doubt the loss of water by exhalation is ordinarily compensated for by diminished loss through skin or kidneys, and by increased intake of fluid; but the patients are weighed on getting out of bed, and we might expect a very dry night, or succession of nights, to be followed by an appreciable reduction in weight. The sudden changes in the weight average might be due to a marked change in the water-content of the external atmosphere. There does not, however, appear to be any support for this in the actual facts. In the six years there were eleven weeks of exceptional gain in weight, averaging over 1 lb. per patient, and thirteen weeks of exceptional loss, averaging over 0.25 lb. per patient. Yet the average water-content of the air in the losing weeks was 4 grains per cubic foot, as compared with 2.65 grains in the weeks of gain, and in no week of pronounced gain in weight was the water-content so high as the average for the losing weeks. The average rainfall was practically the same for the weeks of gain as for the weeks of loss. The ten weeks of highest rainfall, averaging 1.83 in., and the sixteen weeks of lowest rainfall, averaging 0.005 in., show the same average weight increase, and in dry weeks with 0.01 in. rain or less the weight average varied from 0.10 to 1.07 lb. gain. The hours of sunshine were practically the same for the weeks of gain as for the weeks of loss; while the air temperature and the accumulated temperature were higher in the weeks of loss than in the weeks of gain.

There is, then, no obvious connexion between the weather and the weekly variations in weight, and it is probable that the sudden interposition of good or bad weeks is merely a chance happening. We have seen that out of 7,067 observations there were 2,084 of loss and 4,983 of gain or no change—that is, the losses and not-losses were approximately as 2 is to 5. With such a proportion as the general rule the probabilities against obtaining, say, 29 not-losses in a week of 30 observations are only about 2,000 to 1, and in repeated samples of 30 the chances against are correspondingly reduced. In the Mundesley figures the chances against obtaining the actually observed results are not greater in any instance than 150 to 1, not enough to make a dominant interfering factor a necessary hypothesis.

In the literature I am acquainted with only one paper, a very interesting work by Strandgaard,[2] which deals with weight variations in sanatoriums in a manner similar to the foregoing, and his results show a striking agreement with the Mundesley results. Strandgaard, who writes from Böserup sanatorium in Denmark, has collected the figures of eight Danish sanatoriums over a period of several years, and this has given him a material of about 800 observations a week—enormously larger of course than the Mundesley data. Plotting the monthly averages he obtains a curve very similar in its main features to the Mundesley curve. From January to May the weight gain remains fairly constant about a minimum of 230 gr., then the curve rises steadily to reach in September a maximum of 380 gr. (0.8 lb.), falls again in October and November and reaches the minimum once more in December. The spring and winter months give the lowest values, the summer and autumn the highest, and Strandgaard gives reasons for thinking that in this the weight curve corresponds with the general well-being of the patients, and that the tuberculous in Denmark do better in summer, and especially in autumn, than in spring or winter.

Strandgaard considers that the three main factors determining the weight curve are the relative humidity of the atmosphere, the average temperature and the amount of sunshine. He supports this conclusion by a certain agreement between the curves of weight and those of rainfall, relative humidity, sunshine and temperature, as well as by various minor arguments. We have seen that the English figures scarcely admit of so definite a conclusion, and we may remark that the weight curve can hardly be expected to follow the curve of relative humidity, as Strandgaard suggests. The amount of water supplied from the body varies not with the relative humidity but with the absolute water-content, and the seasonal curves of relative humidity and weight in the English figures are as a matter of fact wholly divergent.

There seems no reason to suppose that the six years selected for examination were exceptional years, or to doubt that the summer–autumn increase in weight is the general rule at Mundesley. The remarkable agreement with the Danish figures, moreover, suggests that this would be found to hold good at other sanatoriums in England, and probably in other countries—at least, of Western Europe; and it would be of interest to learn whether similar results were met with in the high districts of Switzerland, in the numerous institutions in America, in South Africa, and in other parts of the world. The results would be of value, whether they agreed or disagreed with our finding, and might have some bearing on the treatment of consumptives and the regions to which they may best be sent at different seasons of the year. It is not probable, of course, that this seasonal variation is peculiar to the tuberculous. It is much more likely that there is a general increase in the weight of the population in summer and early autumn, though I have not met with any satisfactory data bearing on the point. And it is a large assumption that even in the tuberculous the season of greatest weight is the season when they thrive best. Strandgaard believes that it is so, but his evidence is scarcely conclusive. It is difficult in so variable a disease as pulmonary tuberculosis to obtain clear and objective data of improvement and recovery, and the Mundesley figures are not large enough to allow of definite conclusions. But the fact remains that increase in weight is undoubtedly a sign of improvement in the tuberculous, and, unless there is evidence to the contrary, the presumption is that the season of greatest weight is the season of their best improvement in health.

One other fact deserves a brief mention. If we arrange the data in periods of four weeks instead of by months, so that we have thirteen periods in the year instead of twelve, a marked break in the curve of weights appears, which is obscured in the monthly arrangement. As a whole, the curve remains much the same, but for the four weeks covering the last fortnight in July and the first fortnight of August the weight average drops sharply, and this is true for five out of the six years. A similar drop at this time apparently occurs also in Strandgaard's figures.

He plots nine curves at weekly intervals and gives detailed figures for three more, also at weekly intervals, and, taking the twelve together, there is evident a marked fall in the average values, a break in the curve, in the July–August period. So far as published meteorological data enable one to judge, this is not due to change in the weather conditions. It may be noted that in the curve published by Kroon,[3] showing the seasonal variation in the frequency of human conception, as calculated from the birth curve, there is a similar break in August.

SUMMARY.

In tuberculous patients undergoing sanatorium treatment there is on the average a steady increase in weight. This increase shows a marked seasonal variation, being greatest in the six months from May to October with the maximum in September, and smallest in the six months November to April with the minimum in March.

The six months of greatest weight are also the months of most sunshine, highest temperature, largest rainfall, and greatest atmospheric water-content. This agreement suggests that the weight variation is due to meteorological conditions, but, if it be so, the climatic influence can only be indirect, and no single factor has predominant effect. Sudden changes from week to week occur in the average weight, and there is nothing in the available records to show that these changes are due to weather conditions.

I have pleasure in expressing my thanks to Dr. S. Vere Pearson for permission to use the Mundesley records, and also to Sir Napier Shaw, of the Meteorological Office, for the loan of records and other kind assistance.

REFERENCES.

[1] See, for example, BRITISH MEDICAL JOURNAL, 1916, April 15th, p. 541. [2] Strandgaard, *Beitr. zur Klin. d. Tuberk.*, 1914, Bd. 32, H. 2, p. 179. [3] Kroon, *Nederland. Tijdschr. v. Geneesk.*, 1914, December 19th, p. 2010.

A METHOD OF ANAESTHETIZING SOLDIERS.

BY

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I HAVE long noticed that when coughing occurred during the early stages of etherization a change for a few minutes to chloroform stopped the cough and much lessened mucous secretion. The small quantity of chloroform inhaled exercised apparently a prolonged mitigating effect on the irritating quality of the ether. It seemed to me, therefore, that if the short interval of chloroformization had such a prolonged effect it might be worth while to try the addition of a small quantity of chloroform to the ether in Clover's inhaler, with the object not only of lessening irritation but also of obtaining an anaesthesia more nearly approaching the ideal—that is, a sleep-like one. Since chloroform acts as a depressant, but ether as a stimulant, it should be possible to obtain by a mixed vapour of these two drugs an anaesthesia in which, while there is a proper muscular relaxation, the respiratory and circulatory functions are neither depressed nor stimulated but approximate to their condition during sleep. Such a mixture would probably differ in its proportion according as to whether the open or closed method were used, and also according to the type of patient, if the best results were to be obtained. Perhaps the best all-round mixture would be one in which the respiration and circulation are very slightly stimulated by the addition of a little more ether, thus ensuring safety and counteracting any shock arising from the operation. The idea is to take ether as the standard of safety and so to dilute or modify its action as to obtain some of the advantages of chloroform anaesthesia. Ether thus modified by chloroform, as suggested later, possesses practically the safety of pure ether. When we use such mixtures as E_2C_1, E_3C_1, we regard chloroform as the main drug and modify its action by the addition of ether. It has been shown of late years that the mixing of chloroform with ether enhances the anaesthetic power of each drug; indeed it has been asserted that a mixture of six or seven parts of ether with one part of chloroform increases the potency fully 30 per cent. without increasing the toxicity.

Having at the 1st Southern General Hospital, Edgbaston, the opportunity of anaesthetizing soldiers—that is, patients of much the same age and type, and trained, fed, and living under the same conditions—I tried the effect of different mixtures of chloroform and ether administered by the closed method from a Hewitt's wide-bore modification of Clover's inhaler. To soldiers a routine method seems particularly applicable. They are mostly strong and fit men, well fed, much accustomed to tobacco and consequently with irritable throats; nearly all have coughs due to exposure to wet and cold indoors and out; their nervous system is on a much higher plane of tension than that of the normal individual during ordinary times, so that altogether as a type they are much more difficult patients in whom to induce anaesthesia than are the general run of those met with in civil practice. On the other hand, when once induced, anaesthesia is maintained in them more safely and easily than in the ordinary non-military patient, because, generally speaking, of the healthy conditions in which the former have been living. In fact, soldiers more nearly approach the normal healthy human being than does any other class of patients.

At the end of October, 1915, I began to use various mixtures of chloroform and ether in Hewitt's wide-bore Clover's inhaler, beginning with mixtures of E_4C_1, E_7C_1, E_8C_1, $E_{16}C_1$, $E_{18}C_1$, $E_{20}C_1$, $E_{32}C_1$, by volume.

In the first three of these mixtures the chloroform factor predominated too much for safety, causing blueness and too quiet respiration, whilst in the last one the ether component predominated too much, and the effect of the chloroform was practically negligible. Finally, in $E_{16}C_1$ I found a mixture which suited admirably my purpose, and have used it in more than 1,200 cases. Since the above-mentioned date it has been my routine method for the induction and often for the maintenance of anaesthesia. The $E_{18}C_1$ and $E_{20}C_1$ mixtures I found very useful for debilitated patients.

In 1916 I administered $E_{16}C_1$ to 732 out of 843 cases at the 1st Southern General Hospital—that is, to practically 7 out of 8 patients.

I look upon it as and call it "mitigated ether," and administer it exactly as I should ether by the closed method, the only difference being that during induction I very often allow one or two inspirations of air.

The respiration and circulation are slightly stimulated, the patient is of a good colour, respiration being about half as deep as that during pure etherization. There is much less irritation of the respiratory mucous membranes than with ether alone, but if much coughing ensues during induction, as so often happens in soldiers, I immediately change down to a mixture of chloroform and ether, or more commonly to chloroform alone given by the open method. In fact, in the last few months, in nearly all operations which last longer than a few minutes, save rectal ones, after induction of anaesthesia has been safely brought about and some degree of stimulation of the vital functions established by $E_{16}C_1$, I change down to chloroform and find it best suited to maintain anaesthesia.

The contraindications to the addition of the small amount of chloroform to the ether are cases in which the fullest stimulation by ether is needed, as in patients in whom there is great shock, loss of blood, or toxaemia, or where rapid dilatation of a sphincter or stricture is necessary.

As compared with pure ether, administration of $E_{16}C_1$ by Clover's inhaler causes less irritation, less muscular spasm, less mucous secretion, less excitation, and less obnoxious smell. The induction of anaesthesia is quicker and quieter and muscular relaxation appears more quickly and is more complete. The addition of this small amount of chloroform seems to make a very great and advantageous difference. The $E_{16}C_1$ may easily be given without any preliminary administration of nitrous oxide or ethyl chloride.

All soldiers have a preliminary intramuscular injection of morphine one-sixth of a grain, and atropine one-hundredth of a grain, as nearly as possible half an hour before the time of operation, so that the maximum effect of these drugs is obtained. This injection is essential for quiet induction and stoppage of secretion. The effect of the morphine helps greatly to quieten induction and to maintain and steady the anaesthesia. It also enables a lighter form of anaesthesia to be used than is possible without it. The disadvantage of the morphine is that

very occasionally, owing to the light respiration, the patient may become a trifle bluish under chloroform.

Since 1901, when I first used it by the closed method, I gave ethyl chloride as a preliminary to etherization, but since administering "mitigated ether" it occurred to me that a better preliminary would be a few drops of a mixture of two parts of ether and one part of chloroform dropped into the bag of the inhaler, just as is ethyl chloride. At first I used to drop the mixture on to a little wad of wool fixed in the angle piece to which the bag is attached, but I soon found it better to spray directly into the bag 15 to 20 drops (not minims—2½ drops are about equal to 1 minim) of E_2C_1. This quantity seems to be equivalent to the usual dose of 3 c.cm. of ethyl chloride. The few drops of this mixture do not volatilize so quickly as does ethyl chloride, the vapour does not surge into the head so rapidly, and the transition from the one mixture of chloroform and ether to another mixture of the same components seems somewhat easier, quicker, and smoother than from ethyl chloride to ether or to "mitigated ether." The small quantity of mixture so administered is far less costly and more convenient than ethyl chloride, and I now use it before giving ether in private work.

With regard to the course of anaesthesia during the administration of $E_{16}C_1$ I have had two cases in which respiration ceased, in one of which the fault was due to inadvertence. In both cases the pulse and colour remained excellent, and respiration quickly restarted after a few compressions of the chest. Otherwise I have had no danger or trouble.

With regard to lung troubles I have had four cases of pneumonia and two or three of bronchitis.

Pneumonia.

Case 1.—Patient aged 25; stone in ureter. No cough before operation. Anaesthetic, E_2C_1, $E_{16}C_1$. Anaesthesia lasted about fifty minutes. Three days afterwards the patient developed a high temperature and cough. The officer in charge said the patient had a bronchopneumonic patch lasting three days.

Case 2.—Patient aged 22; double hernia. Had cough for years and been subject to attacks of bronchitis since childhood. Anaesthetic, E_2C_1, $E_{16}C_1$, followed by chloroform as soon as under. Developed pneumonic signs at right base, later on had signs at both bases. The patient was very ill, but recovered.

Case 3.—Patient aged 26; appendicectomy. Anaesthetic, $E_{16}C_1$, chloroform for a few minutes, $E_{16}C_1$. Administration lasted half an hour. Had general bronchitis and right apical pneumonia. Denies previous cough.

Case 4.—Patient aged 23; nephrolithotomy. Rather pink and flabby-looking; chest normal, no cough. Anaesthetic, E_2C_1, $E_{16}C_1$. Perfect anaesthesia for three-quarters of an hour. Next day developed bronchitis and high temperature, then bronchopneumonia; very ill for three days. The ward was a very cold and draughty one.

Bronchitis.

Case 5.—Patient aged 24; hernia. Anaesthetic, E_2C_1, $E_{16}C_1$. Anaesthesia lasted thirty-five minutes. Bronchitis for two or three days afterwards.

All these patients had morphine $\frac{1}{6}$ gr. and atropine $\frac{1}{100}$ gr. before anaesthesia, and had no mucous secretion; therefore there was no question of inhalation of septic material from the mouth.

Two other patients, in addition to Case 5, had a good deal of bronchitis afterwards. There was no prolonged sickness after any administration. It is very probable that in no case was the lung trouble wholly, or even partly, due to the anaesthetic, because the patients had to be transferred after operation along draughty corridors to wards which were also sometimes draughty and cold, and were never intended for hospital use.

In the pressure of present-day hospital work rapid induction of anaesthesia is necessary. The method described is all round the quickest and least unpleasant one I know, and is practically as safe as the more usual sequences of gas and ether or ethyl chloride and ether. Refinements and time-spending methods of administration, such as gas and oxygen, intratracheal anaesthesia, open ether *ab initio*, percentage inhalers, have little scope and less efficiency, when applied to tough fighting men, in the routine of a big and busy hospital. Safe, simple, and speedy methods are the most valuable.

CONCLUSIONS.

1. The irritation caused by ether vapour administered by the "closed" method is much mitigated by the addition of a very small quantity of chloroform.

2. The addition of this small amount of chloroform to ether distinctly saves the work of the lungs and heart, which during a long or severe operation may be a very important factor.

3. The mixture is practically as safe as the administration of ether alone, because the ether greatly predominates.

4. It is valuable as a routine method of producing anaesthesia in soldiers, being reasonably safe and rapid.

5. A few drops of E_2C_1 are preferable to ethyl chloride as a preliminary to the administration of ether, or $E_{16}C_1$.

6. For maintenance of anaesthesia E_2C_1 or chloroform are preferable to even "mitigated ether," owing to the prevalence of respiratory irritability among soldiers.

MULTIPLE SEVERE INJURIES FROM A BOMB EXPLOSION: OPERATION: RECOVERY.

BY

CAPTAIN NORMAN DAVIDSON, F.R.C.S.E., R.A.M.C.

THE following case deserves attention on account of the multiplicity of the wounds, their seriousness, and the good recovery following operation.

Pte. J. W. P., aged 25, while practising bombing on December 17th, 1916, threw a bomb which burst prematurely at about a distance of a little over a yard from his head. This occurred about 11.30 a.m. He was dressed by the medical officer of his battalion, and was brought at 12.45 p.m. by ambulance to this military hospital, where he was examined immediately on admission.

He was quite conscious, and complained much of abdominal pain; he said he was quite blind. Pulse 120, temperature 97.4° F., respirations 20. He showed a considerable amount of blanching, and was suffering from great shock. The wounds were as follows:

1. Wound of the scalp, 2 in. long, on the vertex down to the bone.
2. Perforating wound entering the abdominal cavity at the junction of the ninth costal cartilage with its rib on the right side.
3. Wound of left thigh entering the left groin 1 in. below Poupart's ligament, in a line with the vessels, and with its exit below the left knee, apparently smashing the head of the tibia and tearing the patellar ligament.
4. Wound in the right groin 1 in. below Poupart's ligament.
5. Small superficial wounds of right and left arms, abdominal wall, etc.

Operation: The patient was brought to the theatre at 3 o'clock the same day, and anaesthetized by ether. He had already had ¼ grain of morphine hydrochloride and 500 units of antitetanic serum. With the assistance of Lieutenant J. F. Gill, R.A.M.C., the skin around the wound over the ninth costal cartilage was excised, and it was seen that the cartilage had been half torn through and a fragment had perforated the peritoneum. This wound was then sewn up.

The abdomen was immediately opened in the hypogastrium by splitting the right rectus sheath and pulling the rectus towards the middle line, the nerves to that muscle being preserved by pulling downwards. The abdomen was found to contain about a pint of blood and blood-stained serum. This was mopped out, and an examination was made of the abdominal contents. The liver was found to be intact, as was the stomach. The duodenum was found to have a perforating wound at the middle of the second part, practically in the centre of its anterior surface; this was closed with a Lembert stitch of linen thread. The jejunum was next followed, and there was found, about 12 in. down, a perforation at the free edge and another on the mesenteric edge, with a small chunk of bomb-case lying in the mesentery. The missile was removed and the three holes closed by Lembert sutures of linen thread. No further abdominal lesion was found, though it was noticed that gauze which had been placed near the duodenal lesion had a little bile on it, but search failed to reveal any injury. As the patient was in a very exhausted condition the search was not prolonged; a rubber tube rolled up in gauze was inserted down to the duodenum and another at the lower angle of the wound down to the recto-vesical pouch, and the abdominal wall closed in layers. Attention was then turned to the left groin, the skin wound was excised, and there was found to be considerable arterial oozing from the depth of the wound. This was opened up freely, the sartorius muscle retracted inwards, and the track of the foreign body was followed. This caused more bleeding. Digital pressure was put on the femoral artery, and by following the track of the haemorrhage one quickly came on the femoral artery and vein at the upper end of Hunter's canal. The artery was isolated and ligatured above and below with stout catgut. On removal of digital pressure there was only a little venous oozing, but on lifting up the artery there was quite a rush of venous blood. Pressure was applied above and below, the artery lifted up again, when it was seen that there was a small longitudinal tear in the vein. This was stitched up with a fine linen stitch for want of better material, as it was considered that ligation of both artery

and vein would be sure to invite the risk of gangrene. The sides of the wound were then drawn together at each end and the centre packed with gauze soaked in eusol.

The wound in the knee was excised and opened up freely, when it was seen that the joint had not been entered, but that the patellar ligament with the tuberosity of the tibia had been torn away. Loose bone was scraped out and the wound packed with gauze and eusol. The wound in the right groin was excised, the track followed down about eight inches to the adductor muscles. A counter opening was made, the track well scraped out, and a rubber tube placed along it. The scalp wound, through an oversight, was not excised, and the patient was returned to bed with the right leg enveloped in cotton-wool and placed in an elevated position. On recovering from the anaesthetic he was placed in the Fowler position. The next day the patient was very ill indeed. Pulse 130, respirations 30, temperature 99° F. He was given morphine freely. He had one and a half grains of morphine hypodermically in the twenty-four hours and salines per rectum, which he retained, also a turpentine enema to relieve some distension.

December 19th. He was better and had had a good night. Dressings were soaked through, so he was dressed. There was no discharge from the lower abdominal tube, but a free discharge of bile from the upper one, free oozing from the left knee wound, and no signs of gangrene in the foot.

December 20th. To-day the foot showed dry gangrene of all the toes. Circulation was apparently good up to the knee. The abdominal tubes and gauze were removed and the tubes only replaced. General condition satisfactory. Had bowels opened, but abdomen seemed distended. Good night. Pulse 96; less bile escaping; tube shortened. Line of demarcation now begun to form at the middle of the calf.

December 25th. Patient doing well, but there was pain in the left leg and oedema above the line of demarcation.

January 1st, 1917. Complained of a great deal of pain during the night. Amputation was decided on, and morphine hydrochloride ½ gr. and atropine sulphate $\frac{1}{200}$ gr. given. The operation was performed with anterior and posterior flaps. The bone was sawn through 2 in. above the knee. At the same time an opportunity was taken to draw together the edges of the wound in the left groin which had become a large granulating area, and the head wound scraped of redundant granulations.

January 2nd. Patient says that he feels better than he has done since he came into hospital. No bile escaped to-day. Tube removed.

January 7th. All wounds healing well.

January 17th. Patient was quite convalescent and went to a concert on a wheeled chair.

To sum up, the patient was injured at 11.30 a.m. and was operated on three and a half hours later. The interval between the accident and the operation was to the patient's advantage as he was in better condition at 3 p.m. than on admission. Morphine, salines, and warmth, were all that was used to combat the shock.

I have to thank Lieutenant Gill, R.A.M.C., for his able assistance and advice, and Sisters Geeve and Frewin, Q.A.I.M.N.S.R., for their care of the patient.

THE VALUE OF FEEDING DURING OPERATION AS A PREVENTIVE OF SURGICAL SHOCK.

WITH SPECIAL REFERENCE TO OPERATIONS ON THE STOMACH.

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IN 1911 I published an article on surgical shock,[1] in which I attributed the phenomena to exhaustion of the food material—the Nissl granules—stored in the nerve cells, more particularly those of the vasomotor centres. Severe haemorrhage and starvation prior to operation were mentioned as important factors predisposing to shock, owing to their leading to a "depleted larder" in the nerve cells.

Whatever theory of the causation of shock is accepted, it is quite certain that loss of blood and insufficient feeding are of great importance as predisposing agents. Operations on the stomach, such as gastro-enterostomy and partial gastrectomy, are often accompanied by severe, and sometimes fatal, shock.

The operation is usually performed either for stricture of the pylorus and consequent gastric dilatation resulting from cicatrization of an ulcer in the pyloric region, or for malignant disease; in another class of case it is performed for severe haemorrhage from a gastric or duodenal ulcer. In the first class the patient's nutrition is low. Owing to the difficulty in the passage of food through the pylorus and the vomiting of a large part of the food ingested, a condition of starvation is induced, and when malignant disease is present, haemorrhages and cachexia add to the debility. In the second class the patient is usually profoundly anaemic, and may have undergone a preliminary course of starvation only very partially alleviated by rectal feeding. It is not surprising that in such cases operations on the stomach produce an extreme degree of shock.

To combat this, it has been my practice during the past ten years to feed the patient during the operation. The operation is proceeded with in the usual way until the suturing with catgut of the mucous membrane and muscular wall of the stomach and jejunum is nearly completed—that is, to within the last ¼ in. A soft catheter with rubber tube and funnel attached is then introduced into the jejunum and passed on until the end of the catheter is in a coil of intestine well within the abdomen, the opening through which it has passed being held firmly with the finger and thumb to prevent any leakage of fluid. The intestinal and stomach clamps have been removed. A pint of peptonized milk, to which a beaten-up egg and an ounce of brandy have been added, is poured slowly through the funnel into the intestine; the funnel is held at a distance of 8 to 10 inches above the abdomen so that no undue distension of the intestine can take place. The catheter is then withdrawn and the operation completed in the usual manner.

Since adopting this procedure I have never seen serious shock follow an operation of this character, and the patient usually leaves the table with a better pulse than he had at the commencement of the operation.

A few weeks ago I operated upon a man of 57 who was wasted and anaemic. He had malignant disease involving the circumference of the stomach about 5 in. from the pylorus. I removed about two-thirds of the stomach, uniting the cardiac end to the jejunum. The operation was long, lasting for two hours, or a little more.

The blood pressure, which was 140 mm. before the operation, fell to 90 mm. soon after its commencement, and was below 90 mm. when feeding was commenced. It had risen to 120 mm. half an hour later, when the operation was completed. He had no symptoms of shock afterwards, and made an uninterrupted recovery.

Shortly afterwards I operated upon a similar case, in which the carcinoma involved a still larger area of the stomach, and the resection was very extensive. The patient suffered somewhat severely from shock at the time of operation, but was sitting up in bed taking food well in the course of a few days. After an operation I generally start regular feeding within twelve hours, giving two ounces of peptonized milk hourly to commence with.

In performing gastrostomy for stricture of the oesophagus or the cardiac end of the stomach upon a patient who is in a cachectic and semi-starved condition, I always feed during the operation, passing a catheter through the gastrostomy opening into the duodenum, and inject a pint of prepared food, and continue feeding regularly at four-hourly intervals after the operation.

In addition to its value in preventing the development of shock, this procedure tends to promote the healing of the stomach and abdominal wounds. It is obvious that tissue cells cannot divide and repair take place unless the cells are provided with food, and speedy union is of great importance in the success of these operations.

REFERENCE.
[1] *Practitioner*, August, 1911.

A CASE OF CEREBRAL ABSCESS OF OTIC ORIGIN.

BY H. BODKIN, D.O.OXON., M.R.C.S., L.R.C.P.

THE following case may be of interest from the symptoms that led up to the diagnosis:

A boy, aged 15 years, was admitted at night to the Bristol Royal Infirmary with pain in the right ear and a temperature of 103°. The history was that he had suffered from chronic suppurative otitis media on both sides from infancy, but had had no pain before.

When seen next day the temperature was 99°, the pulse 72, and he was free from pain, but he had facial paresis on the right side. No other nerves were affected.

The boy's mother, being questioned as to how long his face had been in this condition, declared that it had always been the same and that all her children were born like that.

She produced photographs of several other sons, taken in khaki and broad smiles, which certainly bore out her statement in so far as they all had a very peculiar one-sided smile. This feature was apparently inherited from their father and grandfather. The boy himself stated that he was always laughed at by his mates for having a lopsided face. The mother, therefore, would not recognize the paralysis as such, or consent to operation on that account.

A week later there was a recurrence of the pain and temperature, and the facial paralysis became more complete. Operation was then agreed to, and a radical mastoid operation performed. The maxillary antra being explored as a routine with Watson-Williams sinus exploring syringe, thick pus was found in the left antrum. This condition had no doubt been instrumental in keeping up the otitis media.

The temperature returned to normal next day, and the patient appeared to be progressing favourably for the next fortnight, except for attacks of headache, chiefly referred to the frontal region, coming on every two or three days but only lasting an hour or so, and a general mental depression. "No, I haven't any pain but I feel so downhearted," being the usual information vouchsafed. The boy took his food well, and there was never any vomiting.

On the sixteenth day after the mastoid operation, when the patient was up and about the ward, he was given by a friend visiting him some jam tarts and a cigarette. He contrived to smoke the cigarette unobserved in the bathroom, after which he became collapsed, and had to be carried to bed. He then lost consciousness, and developed paralysis of the left arm and leg, with conjugate deviation of eyes to the right, the right pupil being widely dilated and inactive to light; the left pupil remaining of normal size and active to light. The right fundus showed arteries very contracted and veins full, but no swelling of disc. The knee-jerk was lost on the left side. Extensor plantar reflexes on both sides.

Right temporo-sphenoidal abscess was diagnosed, and preparations made for operation.

Two hours later the paralysis had completely passed off, the eyes were normal, and the patient quite conscious, and able to relate his smoking exploit and declare himself all right again.

The operation was proceeded with, the dura being exposed in the tegmen tympani, and further uncovered by the removal of bone upwards. Pus was sought for with a slender-bladed knife, and a small collection found at a depth of rather over an inch, about an inch and a half above and a little anterior to the auditory meatus. A culture of the pus from the abscess gave a feeble growth of *Staphylococcus albus* and a few streptococci. The abscess was drained with gauze, and for some days the patient appeared to be doing well, and was particularly ravenous for food, but died on the tenth day after the abscess was opened.

On *post-mortem* examination it was found that the abscess cavity was well drained, but the infection had spread up the meninges, there being a thick layer of pus under the dura in the right parietal region.

I think the temporo-sphenoidal abscess must have been present when he was first admitted, but had given insufficient sign of its existence for diagnosis till the accident of the cigarette smoking in a young boy in an enfeebled condition of health led to sudden cerebral congestion which brought out pressure signs, these signs passing off again as quickly as the effects of the tobacco. Previously there was only the very transient headaches and the more marked mental depression to suggest the presence of an abscess. I have noticed before in chronic cerebral abscess a mental depression or melancholy, much greater than would be expected from any complaint of pain or other symptoms, and on meeting this again shall be inclined to try the effect of tobacco or some similar drug for its diagnostic value as shown accidentally in this case.

I am indebted to Dr. Watson-Williams for permission to record this case.

TREATMENT OF TRENCH FEET BY THE SUBCUTANEOUS INJECTION OF OXYGEN.

BY

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THERE are several stages of trench feet:

1. *Neuritic*, producing acute pain, and preventing the patient walking or sleeping. There is no swelling or discoloration of the foot.

2. *Oedematous* without discoloration, but acute pain is present, produced by the pressure of nerve endings.

3. *Oedematous* with blisters, and varying discoloration of the skin short of gangrene.

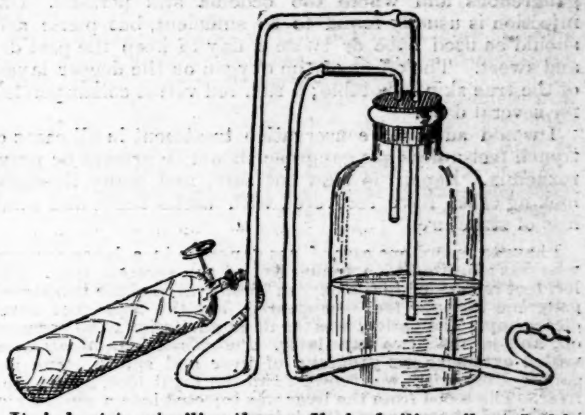
4. *Gangrenous*, partial or circumscribed, with oedema and blisters, and reddening of the skin involving the lower leg.

I have employed subcutaneous injections of oxygen in Classes 2, 3, and 4.

Technique of Treatment.

It is essential that in all cases of trench feet, whether the skin is broken or not, antitetanic serum should be given under the skin in the arm or pectoral region; the dose should be 500 U.S.A. units.

The operator requires a Woulfe bottle, with two glass tubes bent at an angle and inserted into a tightly fitting cork. To the end of one glass tube is fitted three yards of red rubber tubing connected with the usual oxygen cylinder; to the end of the other glass tube is fitted two yards of a finer rubber tube, and the distal end of the tube has a salvarsan needle fitted on. The bottle contains a saturated solution of sodium carbonate.



It is best to sterilize the needle in boiling oil, and this should be done for each individual case. The operator having sterilized his hands uses a little iodine on the proposed sites of puncture. The needle is inserted into the subcutaneous tissue at a point midway between the heel and external malleolus. The oxygen is allowed to enter slowly until the foot is filled up. The needle is then withdrawn, and inserted midway between the internal malleolus and the heel. If the toes are black and cold the needle is inserted in the mid-line at the base of the toes. It is important that the oxygen should be injected slowly. So far the process is simple, but one learns with experience that if the part is almost gangrenous injection into the deeper tissues is of advantage.

The treatment is based on the conclusion that trench foot is akin to Raynaud's disease. The oedema produces stasis in the veins of the foot, impeding or stopping circulation. The venous blood, if oxygenated, will help to keep the tissues alive until the serum can be drained away. The oxygen helps to drive out the serum slowly but steadily through the puncture holes. Mere puncturing has been found useless in relieving the oedema. Furthermore, the oxygen balloons up the subcutaneous tissue, and relieves thereby pressure on the blood vessels and lymphatics. When the oxygen is absorbed and the serum drained away circulation is quickly restored to the limb.

There is marked relief to pain at once, and under the eye of the observer certain changes can be seen taking place. The reddish-blue appearance changes to pink; the redness which often extends up the leg disappears, and where blackened areas exist a white line makes its appearance, and any living tissue is picked out in pink. The white line indicates what would ultimately be the line of demarcation of gangrene, and it is noted that healthy granulations start from this white line after injections of oxygen. The destruction of parts is greatly lessened, and is often confined to the tips of the toes. Areas of black blood on the dorsum of the foot rapidly undergo change, becoming greyish-white and pink, more resembling healthy tissue. In many of the severe cases recovery of the whole foot has taken place, and in some the loss of a single digit has been recorded. I have amputated in two only out of a large number of cases; both were suffering from severe toxaemia and dangerously ill. In each the other foot made splendid recovery, but amputation of the relapsing foot had to be undertaken to save life. These patients have been evacuated to England in a good state of health.

A minor but important point is the treatment of all blisters. They should be drained by sterilized thread

passed through by means of a straight surgical needle and the ends cut short. The dead skin should be left *in situ* as a protective unless pus is present.

The oxygen causes an increase in the pulse of the posterior tibial artery. There is no rise in temperature, pain is relieved, and sleep promoted. Lint wrung out in 1 per cent. solution of picric acid is applied to the part and renewed every day. No cotton-wool should be employed or disastrous results will ensue. The lint and bedclothes next day will be found saturated with serum, sometimes clear, and sometimes blood-stained. The skin will have a peculiar wrinkled appearance, pointing to the previous state of oedema. The foot is warm even at the toes, and movement will have returned. At the end of the second day tingling sensations are complained of. A second injection may be given in the severe cases which are semi-gangrenous and where the oedema still persists. One injection is usually found to be sufficient, but picric acid should be used once or twice a day to keep the part dry and sweet. The effect of the oxygen on the deeper layers of the true skin is notable; a rich red velvet colour persists for several days.

I would advocate conservative treatment in all cases of trench feet unless gas gangrene should be present or grave toxaemia. Repair is slow but sure, and many hopeless-looking cases have recovered with useful limbs and small loss of structure.

I have to record one case of gas gangrene in a lance-corporal who was admitted with trench feet of the severest type. The left foot responded to the oxygen treatment, and the threatened gangrene in both feet disappeared, but the right foot never cleared up. The patient was too ill on admission to be operated on, and he died two days later. *Post-mortem* examination revealed extensive gas gangrene of liver and spleen. The gas gangrene organism was grown from the right foot, spleen, and liver. The blood from the liver was injected into a guinea-pig, which died fifteen hours after injection, and the same organism was demonstrated from its blood as was present in the organs of the man. Captain A. A. W. Petrie, R.A.M.C., kindly carried out these experiments, which were conclusive, microscopically and experimentally.

The cost of the oxygen treatment is small, and oxygen is usually available to most units. There is no risk to the patient if intelligently used. More punctures than three can be used, but healthy tissue as far as possible should be utilized. The length of time for repair and recovery of the part is long in the semi-gangrenous or gangrenous cases. The granulation tissue is often indolent with the epithelial margin heaped up, and here, again, oxygen has been found to stimulate epithelial growth, a hypodermic needle being utilized in place of the salvarsan needle.

The conclusion drawn is, that if the oedema can be relieved by withdrawing the serum, the circulation can be re-established, and during this withdrawal the tissues are given oxygen to keep them nourished.

These notes are offered as an additional line of treatment for combating a condition which is the despair of the military commander and medical officer. My thanks are due to Lieutenant-Colonel A. Hull, of —— Base Hospital, for his helpful encouragement and permission to publish these notes, and to Captain A. A. W. Petrie for his experiments in the case of gas gangrene recorded above.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CARTILAGE GRAFTS FOR CLOSING CRANIAL DEFECTS.

IN the *British Journal of Surgery*, January, 1917, p. 454, a method of closing cranial defects by portions of bone taken from the tibia is described by Mr. Albert Morrison, and in the BRITISH MEDICAL JOURNAL, March 3rd, 1917, p. 307, is an abstract account of a similar method advocated by Dr. R. Pflugradt, the bone in the latter instance being taken from the external table of the skull. The method I am about to describe I have found simple and efficient.

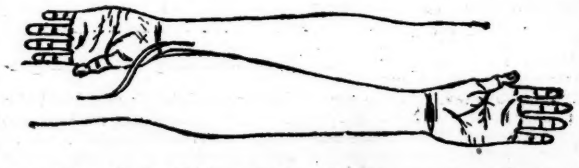
A flap of scalp slightly larger than the cranial defect it is proposed to remedy is turned down and separated from the dura mater. The edge of the internal table is separated also from the dura mater for about one-eighth of an inch all round. A flap of skin is now turned down over the false rib near the sternum, and with a scalpel a piece of cartilage is removed slightly larger but corresponding in shape to the bony defect. If the opening is a large one several pieces of cartilage may be used. The piece or pieces of cartilage should be bevelled at the edges to allow them to fit under the bone. Should there be any difficulty in retaining the cartilaginous grafts in position, cross sutures of catgut can be inserted over the gap, from one side to the other, so as to form a cage under which the cartilage lies; this, however, is seldom necessary. The scalp flap should be replaced and sutured, and a few strands of silkworm-gut placed beneath the angle of the wound to prevent a haematoma forming.

THOMAS YOUNG SIMPSON, M.D., M.S., F.R.C.S.
Plymouth.

A SIMPLE METHOD OF BLOOD TRANSFUSION.

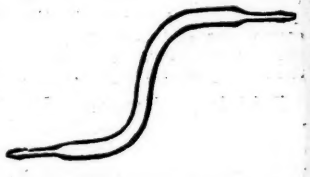
SINCE blood transfusion is often necessary where there has been either primary or secondary haemorrhage, it may be useful to describe a simple apparatus which I have on several occasions employed in direct transfusion.

The transfusion is from the radial artery of the donor to the median basilic vein of the recipient, the corresponding limb of each being used; and the connexion is made by means of a glass cannula, as illustrated. Each limb of the



cannula, and also its transverse portion, measures three and a half inches. The ends of the cannula are tapered, and have a flange near their termination.

The donor and recipient are placed in the dorsal decubitus and their abducted limbs are placed in the supine attitude on a small table between the patients. The surgeon and his assistant are then able to stand between the patients and have easy access to the field of operation. Before beginning the operation, however, the cannula must be in sterile liquid paraffin at the body temperature, ready for use. The radial artery of the donor and the median basilic vein of the recipient are simultaneously exposed under local anaesthesia by the surgeon and his assistant. A small slit is then made in the radial artery and one end of the cannula inserted to a little beyond its flange. A ligature is now tied round the artery and cannula, thus fixing the cannula in the lumen of the artery. With each pulse blood is pumped through the cannula, and, while this is so, its other end is inserted in a similar fashion into the lumen of the median basilic vein of the recipient. To keep the stream of blood, whilst flowing through the cannula, at its normal temperature warm sterile lotion should be continuously dropped on the cannula.



During the transfusion the condition of the donor must be carefully observed, and the transfusion stopped when symptoms of depletion are fairly evident. Most donors can stand it for about fifteen minutes without any untoward effects.

The one drawback to direct transfusion is, of course, that we cannot estimate the quantity of blood transfused. On the other hand, it is difficult to say how much blood any individual can give without suffering after-effects, so that in any case the donor's condition is the only safe gauge to go by. This method of transfusion may recommend itself to some on account of the simplicity of its technique, the cheapness of the apparatus, and the security which it affords against either blood clot or air entering the circulation of the recipient.

This transfusion cannula can now be obtained from Messrs. Down Bros., Ltd., London. I am indebted to Corporal H. J. Lowe, of the 11th Royal Warwicks, for the illustrations.

JAMES BUCHANAN, M.B., Ch.B.Glasg., F.R.C.S.Edin.,
House-Surgeon, Norfolk and Norwich Hospital.

SUPPURATIVE (NON-TUBERCULOUS) ADENITIS TREATED BY ASPIRATION.

THE advantages of aspiration, in the treatment of non-tuberculous adenitis, over excision, with frequent dressings, etc. and subsequent scar disfigurement are obvious, particularly in the upper part of the neck.

Case 1.—E. J., aged 35, male, complained of swollen and tender lymphatic gland just below the border of the jaw. As the condition did not subside under fomentations, and the skin became red and the gland adherent and soft, it was aspirated. About 1 c.cm. of pus was withdrawn; the symptoms rapidly subsided, and the gland was barely palpable when last examined. When aspirated it was the size of the terminal phalanx of the ring finger. It was aspirated once only.

Case 2.—H. W., aged 38, male, had acute inflammation of the left submaxillary salivary gland. The temperature was 101.5° F., and the pulse 100; he was unable to separate the teeth more than half an inch. The duct could be felt as a thickened cord in the floor of the mouth; no obstruction was palpable. He was sent to bed and ordered fomentations. The skin became red and oedematous and the gland fluctuant; it was aspirated five times, about 4 c.cm. of pus being evacuated. The gland was enlarged to the size of a small hen's egg. Complete subsidence and the probable avoidance of an external salivary fistula.

The method illustrated by these cases appears free from risk, provided strict antiseptic precautions are used and the patient kept under observation. As small a needle as will evacuate the pus should be used. Aspiration was done two or three times a week.

In the first case the pus was reported by the County Laboratory to contain spore-forming bacilli, and that of the second cocci. No local cause was discovered in either of the cases.

Burley, Hants. H. E. C. KEITH MURRAY, M.D.

NITRO-GLYCERINE IN TRENCH FEET.

I CANNOT find any record of the use of nitro-glycerine in trench feet on account of its action in dilating the peripheral vessels and increasing the deficient circulation.

We have had such excellent results here with small doses of this drug combined with a little strychnine that I think it deserves attention.

The treatment is accompanied by electricity—first anodal galvanism, later the same interrupted twenty times a minute, and finally faradism. The electrification is undoubtedly of very great value, but nevertheless it is significant that the electrician has noticed the difference in cases where the drug has been discontinued or not used.

E. S. ELLIS,
M.O. Palace V.A.D. Hospital,
Gloucester.

Reports of Societies.

SUDDEN DEATH IN TABES DORSALIS.

AT a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on March 30th Dr. A. R. PARSONS related the facts of two cases of tabes in which sudden death occurred. The first, a man aged 41, had consulted him two years before, complaining of some difficulty in walking and unsteadiness. There was also slight trouble in micturition—at first difficulty; later, some loss of control. Seventeen years previously he had a sore on the glans penis, but no other symptoms. His wife had had one miscarriage. He was a healthy man, with the exception of his nervous system, which showed typical, if rather slight, signs of locomotor ataxia. The Wassermann reaction was faintly positive. The case ran the usual course for two years. Then one day at dinner the patient, who during the day had been in his usual health, suddenly changed colour, and when examined was found to be dead. The second case was very similar; the patient died suddenly while playing bridge. In neither case could an autopsy be obtained, but frequent careful physical examinations during life showed no evidence of arterial disease, and this could almost certainly be excluded. Dr. Parsons considered "cardiac crisis" to be the most probable explanation of death. This condition was almost entirely overlooked in the textbooks, but was mentioned by a few authors, notably Gowers and Osler.

The President, Dr. H. C. DRURY, considered the record of these two cases very important, but thought that, as no cardiac symptom had previously appeared and no anginal symptoms were present during the fatal attacks, it was questionable whether they could be called cases of cardiac crisis. In several cases of sudden death Professor O'Sullivan had found, as the only recognizable lesion, a sclerotic or atheromatous condition of the region of the aorta about the openings of the coronary arteries.

Dr. G. E. NESBITT was interested to hear that sudden death was a possible occurrence in a disease generally considered essentially chronic. He asked what was Dr. Parsons's experience of recent specific methods of treatment—for example, salvarsan or mercurialized serum by intrathecal injection. He had seen some apparent improvement follow, but could not obtain the results often claimed.

Sir J. W. MOORE suggested that death was more probably due to brain mischief—for example, cerebral haemorrhage—than to cardiac crisis of anginal nature.

Dr. W. M. CROFTON asked whether these cases had been treated by intensive mercurial inunction with sulphur baths while they were in Germany, as cases of arrest of the disease by this means were reported.

Dr. PARSONS, in reply, said that as far as was possible by clinical examination arterial disease was excluded. Death was also too sudden in both cases for cerebral haemorrhage. No specific treatment had been tried, either in this country or in Germany, where the cases had been treated at various times. He had seen many of the latter prescriptions, which seemed to consist almost entirely of well-advertised proprietary drugs. There was little hope of improvement when actual organic changes had taken place. He thought the explanation of cardiac crisis as a cause of death fairly probable.

Reviews.

MILITARY ORTHOPAEDICS.

WE had the privilege of publishing during 1916 a series of articles specially written for the JOURNAL by Colonel Robert Jones, C.B., Inspector of Military Orthopaedics, Army Medical Service, on the application of orthopaedic principles to the many problems raised by gunshot injuries. The articles have been collected and revised, and have now been published, with some additional illustrations, by the British Red Cross Society through Cassell and Co. The articles have been arranged in seven chapters, dealing respectively with the positions of election for ankylosis following gunshot injuries of joints; the suture of nerves and transplantation of tendons; the treatment of common deformities of the foot; the treatment of malunited and ununited fractures; the transplantation of bone and some uses of the bone graft; some disabilities of the knee-joint, and the mechanical treatment of fractures under war conditions. The volume bears the title *Notes on Military Orthopaedics*,[1] and is not intended by the author to be a complete treatise, but rather to serve as a practical guide to the surgeon in treating conditions which arise with particular frequency after gunshot injuries.

It expounds the theory and practice of what has been called the Liverpool School of Orthopaedics, one of the greatest gifts that this country has made to practical surgery. Incidentally the whole art and mystery of the application of the Thomas splint—so simple in theory, but proving often so difficult in practice until the surgeon has seen it demonstrated—are set forth. So far as the printed word and clear diagrams can go, this volume will supply the place of a demonstration. But as will be seen from the list of subjects treated in the various chapters, the book covers a very wide field, and the author does not disdain here and there to give hints on prophylaxis, as, for instance, in the highly practical disquisition on the qualities which a good marching boot should possess.

Sir Alfred Keogh, G.C.B., has provided an introduction, in which he observes that the term "orthopaedics" has now been extended to include cases not hitherto comprehended as belonging to this branch of surgery, the wider

[1] Published for the British Red Cross Society by Cassell and Co., Ltd., London, New York, Toronto, and Melbourne. 1917. Demy 8vo, pp. 144; 128 figures. 2s. 6d. net.)

application of orthopaedic principles having been forced upon the attention of surgeons by their special importance at the present time. He points out that this importance rests not merely on surgical, military, or even humanitarian considerations, but upon the grave social and economic problems which attend the proper treatment and education of the maimed and discharged soldier. In future, as he truly says, the general surgeon, no less than the orthopaedist, will be directly concerned with the subject. "Unless," he says, "the general surgeon is concerned with the after-treatment of cases, the efficacy or inefficacy of original procedures will often be unknown to him," and he adds the following significant sentences: "We are here concerned with conditions necessarily entirely different from those of civil life. The military surgeon's connexion with his case is often brief; cases pass from one surgeon to another with extreme rapidity; few surgeons see their patients from the beginning to the end. One could well wish that there was no evil in this. But there is much of evil, and not the least is the fact that the orthopaedic surgeon's work is enormously increased." If this book, he concludes, "brings home to the surgeon the necessity for a correlation between early and late surgical procedures, and at the same time succeeds in obtaining for the discharged and disabled soldier the same surgical interest as is displayed on his behalf in the earlier days of his incapacity, it will prove to be a very solid contribution to national efficiency."

In his preface the author tells how, by the time a soldier has passed through various phases of recovery from septic wounds in several different hospitals, and is finally transferred to an orthopaedic centre for treatment to correct deformity and restore the use of injured joints and muscles, his spirit is often broken. The shock of injury, followed in succession by a long period of suppuration, and then by a wearisome convalescence, during which he receives treatment by massage or electricity, or by monotonous movements with mechanical apparatus, too often leaves him discontented with hospital life. In the orthopaedic centre he finds his fellow patients busily engaged in employments in which they are doing something, and it is not many days before he asks for a job. As an instance he states that at the Military Orthopaedic Hospital at Shepherd's Bush out of 800 patients about 500 are employed at some regular work, and each soon begins to feel that he is becoming an ordinary member of society and not a mere derelict. When the preliminary stages of operative and surgical treatment are over, a man passes by a steady gradation from massage and exercise to productive work, which is commenced as soon as he can really begin to use his limb at all. If his former trade is suitable, he is put to use tools he understands, otherwise some occupation adapted to his disability and curative in its character is found for him. Thus men with stiff ankles are set to drive a treadle lathe or fret-saw. If put on a treadle-exercising machine a man's mind is soon wearied, but if it be engaged not on the monotony of the foot work, but on the interest of the work turned out, neither mind nor body becomes tired. Again, men with defective elbows and shoulders find exercise and mental diversion in the carpenter's and blacksmith's shop, and for those whose hands and fingers are stiff, working with a big swab to clean windows, or with a paint-brush, is a more interesting occupation than gripping spring dumb-bells. Massage and electricity are not neglected, but when combined or followed by work in the curative workshops lead up to the idea of fitness—fitness to work and earn a living and serve the State in an economic sense, even if not to return to the regiment and fight once more in the ranks of the army. A number of orthopaedic centres have already been established in addition to the parent establishment at Shepherd's Bush; in each curative workshops have been or will be started, and Colonel Robert Jones pays a tribute to the initiative and inspiring enthusiasm of King Manuel, the representative of the British Red Cross Society in this matter, by dedicating the volume to him. These curative workshops have already proved to be of very real value; though they are latest, they are not the least important advance in the orthopaedic treatment of wounded men suffering from physical disabilities of their limbs.

The volume will be of much interest and value, not only to those medical practitioners actually serving in the Royal Army Medical Corps, but to that very large number of civil practitioners among whose duties it is to treat men discharged from the army suffering from physical disabilities of the type with which it is concerned.

EXPLORATORY THORACOTOMY.

THE fourth volume of the twenty-sixth series of *International Clinics*[2] is largely concerned with surgery. An interesting paper by Dr. Ashhurst of Philadelphia on encapsulated empyema and abscess of the lung enters a strong plea for the more frequent performance of the operation of exploratory thoracotomy in cases in which the presence of a collection of pus in the pleural cavity is suspected but cannot be proved by the insertion of a trocar. For this exploration Dr. Ashhurst uses local anaesthesia. Half an hour before the operation the patient receives a hypodermic injection of $\frac{1}{6}$ grain of morphine and $\frac{1}{150}$ grain of atropine. He is then placed prone on the table with the arms above the head, and the head turned away from the side to be operated upon. Novocain (1 in 400 solution) is the local anaesthetic of choice; being now unable to procure this drug, Dr. Ashhurst uses in its place a 1 per cent. solution of eucaine, adding three drops of 1 in 10,000 adrenalin solution to each ounce of it. He has used as much as 65 c.cm. of this mixture during an operation. The area of the skin incision is injected, and the intercostal nerves above and below the rib to be resected are blocked each with an injection of 2 c.cm. of the eucaine and adrenalin, made three or four inches from the middle line of the back. Three or four inches of rib are resected as a rule; the pleura is opened between forceps, as the peritoneum is opened in abdominal operations. Even if the lung is not adherent to the parietal pleura (as it commonly is) it seldom collapses to less than half its bulk, and there is comparatively little respiratory disturbance. The lung is then searched for adhesions, and usually where these are thickest pus will be found. Details of the operation in fourteen cases are given by Dr. Ashhurst.

NOTES ON BOOKS.

THE fourth edition of Dr. E. R. STITT'S *Practical Bacteriology, Blood Work, and Animal Parasitology*[3] is a compendious work, containing a great deal of information useful to the clinician in the laboratory. It is well up to date, and includes descriptions of the way in which a great number of clinical tests should be applied. The author covers a vast amount of ground in his comparatively small compass; perhaps the most valuable of his pages are those devoted to animal parasitology. The illustrations are well chosen, and the volume as a whole may be recommended more particularly to students of tropical medicine.

Mr. C. T. KINGZETT'S *Chemistry for Beginners*[4] is a simple little textbook designed for use in primary and public schools. The author holds that the future of the British empire depends largely upon the progress of scientific education within its limits. As a chemist he is anxious that all boys should have the opportunity of acquiring an elementary knowledge of chemistry, and his manual has been written for reading, and for use where facilities for even the simplest laboratory work are lacking. The text, which is devoid of illustrations, deals first with matter and its properties from a chemical point of view, and next with force and energy. Then follows a chapter on the air, together with a brief account of the elements arranged in alphabetical order; the book ends with a brief dictionary of terms and index combined. This little volume should be of service to those for whom it has been written.

In the April number of *The Western Front*[5] Mr. MUIRHEAD BONE continues his drawings of munition works, illustrating among other things the manufacture of big guns and howitzers and the putting together of aeroplanes. Some of his other drawings show characteristic features

[2] *International Clinics*. Vol. 4, 26th Series. Edited by H. R. M. Landis, M.D.Phil., U.S.A. Philadelphia and London: J. B. Lippincott Company. 1916. (Med. 8vo, pp. 318; illustrated. 35s. net, four quarterly volumes.)

[3] *Practical Bacteriology, Blood Work, and Animal Parasitology; including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes*. By E. R. Stitt, A.B., Ph.G., M.D. Fourth edition, revised and enlarged. London: H. K. Lewis and Co., Limited. 1916. (Post 8vo, pp. 517; 115 figures, 4 plates. 9s. net.)

[4] *Chemistry for Beginners*. By C. T. Kingzett. London: Baillière, Tindall, and Cox. 1917. (Cr. 8vo, pp. vi + 106 2s. 6s. net).

[5] *The Western Front*. Part IV. Drawings by Muirhead Bone. Published for the Government by *Country Life*, Ltd. (2s. net monthly.)

of the Somme landscape, and there are also a couple of sketches of hospital ships in port. In addition to the monthly numbers a selection of his drawings are being reproduced on a larger scale (20 in. by 15 in.) under the title "War Drawings." Each part will contain ten illustrations and will be printed in one, two, or more colours according to the character of the original. Among other drawings in the first part are the striking sketches of the Somme front which appeared in early numbers of *The Western Front*. The price of these parts will be 10s. 6d. net, but it will be possible to obtain separate plates. The originals have been presented to the British Museum.

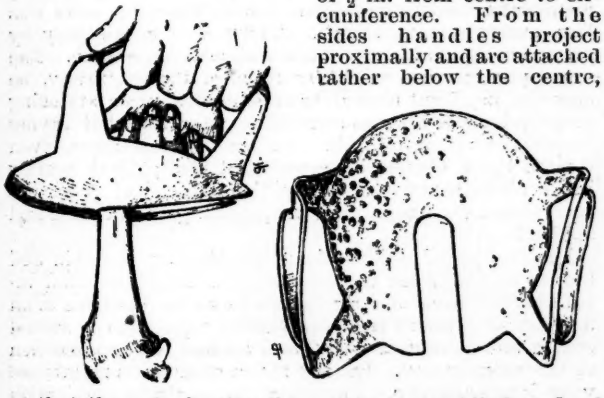
Dr. I. G. COBB'S book on *The Organs of Internal Secretion*[6] gives a general account of the subject written for the benefit of general practitioners of medicine, founded on a series of articles that appeared last year in the *Medical Press and Circular*. It may be regarded as an up-to-date account of hormone-therapy, or the treatment of disease with the hormones derived from the ductless glands. Naturally the extracts derived from the thyroid and parathyroid glands receive the most extensive consideration; those obtained from the pituitary body, suprarenal glands, pancreas and other digestive glands, and the sexual glands are also duly described. Perusal of the volume leaves the impression that hormone-therapy is a wide and speculative method of treatment, perhaps undervalued at present, possibly with a great future before it. Many interesting cases of the successful exhibition of these organic glandular extracts are detailed, to show the indications for these treatments and the lines they should follow.

[6] *The Organs of Internal Secretion: Their Diseases and Therapeutic Action.* A Book for General Practitioners. By I. G. Cobb, M.D., M.R.C.S. London: Baillière, Tindall, and Cox. 1917. (Cr. 8vo, pp 246. 5s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Amputation Retractor.

MAJOR E. K. MARTIN, R.A.M.C., writes: This instrument, designed to facilitate retraction of the soft parts while dividing the bone, consists of a circular metal disc, 7½ in. in diameter with a slot 1⅛ in. wide running downwards from the centre to the periphery. Towards the distal side the metal plate is convex, with a fall of ½ in. from centre to circumference. From the sides handles project proximally and are attached rather below the centre,



so that the act of retraction presses the blind end of the slot against the bone. The soft parts are then exposed only on that side of the bone away from the saw. The retractor is particularly adapted for amputations above the knee. It can be made locally of any convenient material. The original models were made of tin with iron handles riveted in place. That illustrated is hammered out of a piece of sheet aluminium.

RADIUM THERAPY.

THE RADIUM INSTITUTE, LONDON.

THE report prepared by the Medical Superintendent, Mr. Hayward Pinch, F.R.C.S., of the work carried out at the Radium Institute, London, during two years from January 1st, 1915, to December 31st, 1916, is about to be issued.* It is arranged on the same general plan as the previous reports, some of which have been published in full in our columns. The policy of declining to treat operable cases of malignant disease—rodent ulcer alone excepted—has been rigidly adhered to save in those instances in which the patient has positively refused to submit to operation. On the other hand, the cases have not been selected, and only those have been refused in which the patients were practically moribund, or where the disease was of a kind for which radium therapy was manifestly unsuitable. In stating the results the term "cured" is not employed; the term "apparently cured," which is used, is to be interpreted as representing a condition in which all trace of the original lesions has disappeared, in which there is no sign of recurrence, and in which the patient is, so far as can be determined by a thorough and careful examination, free from any indication or symptom of the disease. Cases have been classed under the heading "improvement" only when the result of treatment was to produce a definite marked degree of benefit either in retardation of the progress of the disease, diminution in the size of the growth, healing of ulceration and arrest of haemorrhage and discharge, or relief of such subjective symptoms as itching, tenderness, pain, dyspnoea, and dysphagia. The strength of the apparatus used is expressed in the report in terms of hydrated radium bromide, the radium element content of which is 53.6 per cent.

In epitheliomata of the buccal, laryngeal, and pharyngeal mucous membranes, though temporary improvement frequently followed on radium treatment, the final result was usually disappointing. Of 58 such cases treated to a conclusion, 16 were dead at the time of the report, 13 were not improved, 25 were improved, and 4 were apparently cured. In addition 30 cases abandoned treatment and 14 were examined but not treated. In some rare instances isolated nodules in the tongue responded well to the burying within their substance of a tiny powerful emanation tube of 50 mgr. or more initial activity, screened with 1 mm. of silver or 0.3 mm. of platinum, for a period of eighteen to twenty-four hours. Brisk reaction occurred, followed by fibrous changes in the nodule and arrest of the disease. Small and circumscribed growths in the soft palate did comparatively well under this method of treatment, and of all epitheliomatous lesions in the mouth and fauces these were regarded as the most suitable for radium therapy. Of 6 cases of vaginal epithelioma, 4 were apparently cured, 1 was improved, and 1 not improved. Primary epitheliomata of this region usually reacted satisfactorily to prolonged exposures with powerful applicators heavily screened, and if of recent origin and without much surrounding induration were often completely removed.

Mr. Pinch reports that the symptomatic improvement which almost invariably follows the radium treatment of inoperable cases of carcinoma of the uterus is most striking; arrest of haemorrhage, lessening of discharge, healing of ulceration, reduction of surrounding infiltration, diminution of the rate of growth, and amelioration of pain are constantly to be observed, and in some instances cases previously declared to be inoperable became operable. The treatment should be repeated at intervals of six weeks or two months; a 50 mgr. or 100 mgr. tube, screened with 2 mm. of lead, and 3 mm. of rubber, is introduced into the cervical canal, or, if this be impracticable, into the posterior fornix; a powerful flat applicator containing 80 mgr. to 100 mgr., screened in a similar fashion, is placed on the abdominal wall over the fundus. The exposure should be from thirty to sixty hours, spaced over from five to ten days. When the disease is confined to the cervix and the growth is of the fungating type, a preliminary curetting of the ulcerated mass is stated to be desirable.

The results in carcinoma of the rectum varied very greatly; the best were obtained in persons over 50, in whom the growth was annular in type, vascular in character, and situate in the upper half of the rectum. The plaque-like growth, with much surrounding infiltration, was rarely improved, and, owing to the difficulty of shielding the adjacent healthy mucous membrane, troublesome infiltration generally occurred. In an annular, vascular, and exuberant growth, with a tortuous and much constricted lumen, radium treatment often relieved the threatened obstruction; but sooner or later, both in this type of growth and in those of a spongy character, fibroid contraction of the lumen occurred, necessitating colostomy or regular dilatation of the stricture. When the growth is extensive and ulceration present, colostomy is recommended before radium treatment, both to prevent pain and because, when the growth is situated high up, the colostomy aperture enables the upper portion of the growth to be treated with a tube passed down the sigmoid.

* The secretary will supply a copy to any medical man who applies to him at the Radium Institute, 16, Riding House Street, Portland Place, W.

The results in cancer of the rectum were not very brilliant. Of 51 cases treated to a conclusion, 33 were improved, 10 were not improved, and 8 died; in addition, 14 abandoned the treatment.

The report is very emphatic that radium should never be used as a substitute for operation in the treatment of early cases of mammary cancer. In rapidly growing carcinoma of the medullary type, radium had little effect, but in slow-growing cases of the atrophic type it was often found of considerable use in checking the progress of the disease, arresting ulceration and even causing it to heal, diminishing induration and lymphatic engorgement, and relieving pain. Quite frequently its use was followed by the disappearance of small cutaneous nodules and reduction in the size of infected glands. Of 111 cases of carcinoma of the breast treated to a conclusion, 6 were apparently cured, 67 were improved, 24 not improved, and 14 died.

Of rodent ulcer, it is said that lesions which have not been subjected to any previous treatment with *x* rays, carbonic acid snow, or ionization, which do not affect mucous membrane, bone or cartilage, and do not exceed 3 cm. in diameter, can almost invariably be cured by one treatment. A full-strength applicator is used unscreened, and an exposure of between one and a half and three hours given, its length being determined by the amount of induration and infiltration present. The reaction which follows is usually severe, but the resultant scar is smooth, supple, and inconspicuous, and the tendency to recurrence extremely slight. The number of cases of rodent ulcer treated to a conclusion was 169; of these, 122 were apparently cured, 37 were improved, 8 were not improved, and 2 died; in addition 6 abandoned treatment.

The result in cases of sarcoma, if treated before dissemination into the internal viscera, was usually good. The treatment must be vigorous, both by the burying of emanation tubes within the substance of the growth and by the external application of powerful screened apparatus. The response of lympho-sarcomata was very remarkable, the growths commencing to shrink within a few days of the termination of the treatment and rapidly disappearing. Some systemic disturbance, with a temperature of 101° to 102°, languor, and occasional nausea or vomiting, were generally noticed, but rarely persisted for more than four or five days.

With regard to fibroid disease of the uterus it is said that if ordinary methods of treatment have failed to relieve menorrhagia and metrorrhagia and the patient declines to submit to operation, radium is worthy of trial, as it will almost certainly lessen or abolish the extensive loss of blood, and will sometimes produce considerable diminution in the size of the uterus.

In cases of lupus vulgaris which have not responded to treatment with the Finsen light, radium may be used with a fair prospect of success, but the treatment must be vigorous. Lupus erythematosus, it was found, frequently responded to radium treatment.

In pruritus, especially if of long standing and associated with leucoplakia or hyperkeratosis, radium was often of the greatest use, but where no actual lesion existed and the trouble was purely nervous the results were not satisfactory.

In arthritis deformans, of which 128 cases were treated to a conclusion, previous experience was confirmed, the daily administration of 250 c.cm. of radium emanation solution of a strength not less than one millicurie per litre often producing a very remarkable improvement, especially in persons under 40 years of age, in whom the disease had been of short duration and infective in origin, the changes being periarticular and affecting many joints.

Mr. Pinch acknowledges his indebtedness to his colleague, Dr. J. E. A. Lynham, both in the preparation of the report and in the conduct of the night clinic. The total number of patients treated was 1,313, but in 123 of these treatment had not been completed at the time of the report. Altogether we understand that during the past two years the Institute has given 12,331 treatments, and that of these 8,373 were given free of charge to necessitous patients. In a report on the chemico-physical laboratory Mr. W. L. S. Alton, the director, states that owing to the depletion of the staff by military exigencies, very little new work was attempted, the preparation of radium emanation applicators and radium emanation solutions having occupied the time of the members remaining.

THE ROYAL INFIRMARY, EDINBURGH.

Dr. Dawson Turner has presented to the managers his report on the radium treatment at the Royal Infirmary, Edinburgh, during the year 1916. He states that 66 patients had attended for radium treatment. The total attendances during the year were 520; 28 patients suffered from rodent ulcers, 25 from inoperable malignant disease, 7 of these affecting the vagina or cervix uteri. There were 7 cases of exophthalmic goitre and 4 of naevi. Amongst the malignant cases there were 8 of sarcoma and 17 of carcinoma. Sarcoma, in Dr. Turner's experience, invariably benefited by radium treatment, and, if accessible and localized, could be entirely removed. Rapidity of growth was no contraindication to the use of radium; and there was, in fact, reason for believing that rapidly proliferating cells were more vulnerable than cells which in morphology and growth more nearly resembled the normal. He quoted the opinion of Gaarenstroom, of the Amsterdam Cancer Institute (*Archives of Radiology*, December, 1916), who holds that the histological structure is the chief criterion and that round-celled sarcoma generally reacts favourably, spindle-celled less so, and polymorphous-celled least so. Gaarenstroom based this opinion upon an experience of 23 cases treated by the Roentgen rays. He made no use of radium, and Dr. Turner points out that the effect of radium rays may not be quite the same as that of Roentgen rays. Dr. Turner found myelosarcoma, lymphosarcoma, large spindle-celled sarcoma, and parotid mixed-celled tumours extremely sensitive to radium rays.

Malignant disease of the vagina and cervix was favourably affected by radium treatment, and epitheliomas, if localized, could confidently be expected to disappear. Owing, however, to the difficulty of efficiently raying the more inaccessible portion of the growth, recurrence in these positions after a longer or shorter period was common. Treatment of the recurrence was, as a rule, less successful than that of the primary growth for two reasons: (1) That the recurrence was probably situated in a less accessible position, as in an extension to the broad ligaments, and (2) that after a course of raying only those cells survived which were refractory to the rays, and a recurrence consisting of such cells or daughter cells was less susceptible to attack. There was a tendency by natural selection to breed cells which were immune. The same phenomenon might sometimes, though rarely, be observed in rodent ulcers, for an extended ulcer attacking perhaps bone or mucous membrane after repeated raying might not respond at all. In the cervical cases, even though there should be recurrence, the patient greatly benefited in the meantime by the removal of pain, the cessation of discharges, and the general gain in health and strength.

Uncomplicated rodent ulcers situated on the skin and not too extensive for the amount of available radium invariably did well. Recurrences which might be due to an insufficient primary treatment easily yielded to a second course and remained cured, and scarcely any contraction of the skin ensued. Rodent ulcers on mucous membrane were less amenable. Though a single strong application might suffice for their removal, Dr. Turner preferred, when possible, to divide the necessary dose into two or three, administered at three or four days' interval. To prevent recurrence, the deeper parts as well as the superficial must receive adequate treatment.

Seven cases of exophthalmic goitre—five females and two males—received radium treatment. All benefited save one, an acute case, who died in less than a month after the treatment from hyperthyroidism. As mentioned in the report for the previous year, indisputable benefit was occasioned in exophthalmic goitre without any necessary obvious change in the thyroid gland, though generally it was diminished in size.

Appended to the report are notes of 17 cases, including instances of exophthalmic goitre, sarcoma, epithelioma, myeloma, and chondro-fibro-sarcoma.

A CONGRESS and Exposition are to be held at Monaco with the object of promoting the expansion of the thermo-mineral and climatic stations and watering places of the allied nations. The Congress is under the patronage of the Prince of Monaco, and the head quarters of the organizing committee are at the Institut Océanographique, 195 rue Saint-Jacques, Paris.

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SATURDAY, APRIL 21ST, 1917.

THE PROPOSED MINISTRY OF HEALTH.

ALTHOUGH the Government's intentions with regard to the establishment of a Ministry of Health have not been made known, and are, there is every reason to suppose, still in a fluid if not nebulous state, one or two recent events point to the fact that a scheme of some kind is under construction for submission to the Cabinet. It is therefore clear that now is the time for the medical profession to formulate its views upon the matter, in order that they may be pressed upon the authorities before the Government scheme is crystallized and made public. An expression of medical opinion before the Government has openly committed itself to any particular course is more likely to be effective than if delayed so that it must take the form of criticism of an announced policy.

As we have pointed out several times lately, the problem is an immense one and bristles with difficulties which are all the greater because the energies of the nation are now bent upon the prosecution of the war, and so large a proportion of the profession is serving in the army that the elected bodies of the British Medical Association encounter difficulties of a kind precisely similar to those Parliament itself meets in learning what the most active minds in the constituencies are thinking.

Lord Rhondda, in the reply to a deputation from the National Associations of Insurance Committees for England and Wales, which waited upon him last week, said, as reported in another column, that the Government is very seriously considering the establishment of a Ministry of Health. He was, however, careful to let fall nothing which would commit the Cabinet, and, in fact, stated that no decision has yet been reached. Speaking for himself alone, he expressed a strong opinion in favour of the establishment of a central authority to deal with public health affairs to be constructed upon existing organizations, and repudiated the idea that he wished to abolish the local Insurance Committee. Beyond this he lifted no corner of the veil; for instance, we are left in ignorance as to the relative positions which it may be proposed to assign to the Local Government Board and the Insurance Commission in the reorganization which would be involved in the setting up of any form of central health department. A little light was expected to be thrown upon this, among other obscure matters, at the conference of approved societies and insurance committees announced for April 16th; but this meeting, for reasons which can only be surmised, has been postponed *sine die*.

The proposal to form a Ministry of Health, if we may judge by the extraordinary number of approving articles in the press, seems to have captivated the public imagination. But if we study these articles we are not rewarded by the discovery of any very definite suggestions as to how the fascinating ideal is to be attained. The only one we have so far come across is contained in the *Westminster Gazette* of April 14th, where two essential features which it is considered a Ministry of Health must possess are set out. "First it must be an independent ministry standing outside any existing department; second it must be not merely an advisory or hortatory department, but a department with real power and initiative. A Health Ministry which was a mere branch of the Local Government Board and liable to its supervision and veto would be a mere rearrangement of machinery, and little or no good could be expected from it." The second proposition with its rider probably expresses pretty nearly the general view of the medical profession, but we confess we do not understand what is meant by the first. What is intended to be understood by the phrase "an independent ministry standing outside any existing department"? Taken in its natural sense it would seem to imply the creation of a new ministry; existing ministries—the Local Government Board and the Insurance Commissions, for example—to go on as before. This, no doubt, is not what was intended, but the phrase is a good example of the loose writing which reflects much of the loose thinking on the subject. A new ministry standing outside any existing department is not what is wanted, but a new ministry containing those sections of existing departments which are concerned with health, expanded to meet new needs, and expansible to meet other further needs that will arise. Our contemporary so far understands this that it goes on to insist that a real health policy means a steady screwing up of backward and reluctant local authorities to a minimum standard of sanitation and housing, and to urge that unless the Health Ministry is strong enough to keep up effective pressure upon the local authorities it will be able to do little good. It is suggested that the only way by which the central authority can be armed against the local authority is "the money way"—by giving the new Health Ministry "a substantial sum to dispense according to the efficiency with which the local authorities administered the health and sanitary code," probably in some such form as the grant-in-aid which the Board of Education has already found a persuasive instrument. We are inclined to doubt whether any attempt has been made to estimate the very large sum that would be necessary; but whatever value there may be in this suggestion, and we know the bitter criticism the phrase "payment by results" has evoked in educational matters, the article seems to us to take a view which is too narrow and bureaucratic when it does not savour of party politics. That our contemporary has some inkling of this defect appears from the peroration where it is said that the Ministry of Health must "enlist in its service men of high repute and ability in the special subjects with which it will have to deal. This means going outside official circles and obtaining the aid of consultants or specialists already well known to the public." We would ask for a definition of terms. What is meant by "the public"? Does it mean that very vague afflatus the general public sentiment of the country, which can only be aroused now and again for a short time, when it flies off in some other direction, or does it mean that very real, always active thing, local public opinion? This is no captious question, but goes to the root of the matter; for we believe that when the very large problem that has now been raised receives the careful study it deserves it will be found to involve something a great deal more than the creation of a Ministry with power to give or withhold grants, and that it will be seen to be necessary so to reconstitute local administration that it may be a counterpart of the central organization, and, like it, attract to the public service "the aid of consultants or specialists already well known to the public"—the local public.

In response to the desire of the President of the Local Government Board to be put in possession of the views of the British Medical Association upon the general question of a Ministry of Health, a committee has recently given very close consideration to the principles which should underlie any workable scheme acceptable to the medical profession and in the true interests of the community. The immediate aim of this committee has been to look at the matter in its widest bearings, and, so far as time has permitted, to hammer out some authoritative pronouncement which will represent the view and enlist the active support of the medical profession at large. Its report will be presented to the meeting of the Council next week, and, after consideration and if necessary emendation by it, will no doubt be passed on to the Representative Body. An exposition of general policy would appear to be the need of the moment. It can hardly be doubted that for the medical profession the great risk is that the task to which Lord Rhondda has put his hand may turn out to be so large an undertaking as to be unmanageable in the present state of parliamentary and public business. There will then be the temptation, in order to have something to show as the result of the movement, to rest satisfied by giving the Local Government Board power to make grants-in-aid for other purposes than those for which it already has such power, and possibly by bringing the administration of insurance within its scope—a ridiculous little mouse to be brought into the world by so mighty an act of parturition as is now in its first stage.

CHILD MORTALITY.

THE report[1] recently issued by the medical officer of the Local Government Board on child mortality at ages under 5 for the years 1911-14 can hardly fail to cause a feeling of shame and indignation at the disastrous failure of our health authorities, local and central, to prevent the lamentable state of affairs revealed. During the four years named, 575,078 deaths occurred in England and Wales at ages under 5, or more than a quarter (28.2 per cent.) of the total deaths at all ages during these years. In some of the 274 urban areas the death-rate was three times as high as in some others. Some consolation is drawn from the fact that even in the most backward towns and boroughs much saving of child life has already been secured, for if the experience of the ten years 1901–10 had continued, the number of deaths in the four years under review would have been 719,000, or 144,000 more than the number which actually occurred. But in spite of this the report has to emphasize the fact that "in every area a very high proportion of the total present mortality could be obviated, and it is well within the range of administrative action to reduce the child mortality within the next few years to one half of its present amount." This is equivalent to saying that, if the authorities and all concerned did what they know to be their duty, over 70,000 child lives could be saved every year. There is, we fear, hardly a remote probability that anything like this saving will be effected within the next few years.

About half of the report is occupied with a detailed comparison of towns with the highest and lowest death-rates among children under 5, and maps are given to show the conditions in the largest centres of population. A consideration of these shows "the outstanding fact that the centres of excessive child mortality are those in which the chief industries of the country are carried on." So much is this the case that we are told that a map of the coal measures of the country might almost serve as a map of the chief areas in which child mortality is excessive. Nevertheless, that "this association is not inevitable" is shown by the large reduction in child mortality already effected in some of the industrial areas and by the great variation in the present mortality in towns having the same or closely allied industries.

Dealing with the chief causes of deaths under 1 year of age, it is stated that 6.4 per cent. of the deaths were returned as due to measles, whooping-cough, diphtheria, and scarlet fever, and 2.9 per cent. to tuberculosis, so that over 9 per cent. can be ascribed to diseases well recognized as infectious, and therefore, it might be supposed, amenable to those preventive measures which the Local Government Board has made familiar. In addition, 18.4 per cent. are caused by diarrhoeal diseases, which are commonly to be attributed to the use of tainted milk and food during hot weather. Bronchitis and pneumonia account for 16.7 per cent., and of the 23 per cent. classed as due to "congenital debility," a considerable proportion are considered to be caused by congenital syphilis. From these figures the conclusion is drawn that more than half of the infant mortality is due to infection *ab extra*. Much of this could certainly be prevented, and this is true even in many cases of simple bronchitis and pneumonia, if the importance of simple precautions against the conveyance of catarrhal infections from persons suffering from "ordinary colds" were more generally realized. The preventability of a large part of existing infant mortality is further shown by its varying magnitude in different areas. For example, in the large towns the infant mortality varied from 67 in Hornsey and 70 in Ilford to 161 in Stoke-on-Trent and 172 in Burnley. But the most striking evidence of the possibilities of life saving is held to be the saving already experienced. Between 1871 and 1915 there was a decline of 29 per cent. in the death-rate of infants; in the second year of life the decline was 41 per cent., in the third year 50 per cent., in the fourth 53 per cent., and in the fifth 50 per cent., the smaller decline in the first year being partly due to the little effect hitherto produced on the congenital causes of mortality and partly to the fact that in infancy it is more a matter of intimate personal hygiene than in the next years of life.

After a detailed examination of the principal areas in which the child mortality is specially large, a general summary is provided of the circumstances of environment that seem to favour excessive child mortality, and the following are separately considered: Maternal ignorance, lack of medical care and nursing, carelessness of mothers, intemperance, poverty, overcrowding of areas or in homes, defective sanitation, industrial employment of married women, and size of family.

A final section gives a summary account of present activities in maternity and child welfare work, with suggestions for further action on the part of local authorities and others which would conduce to the conservation of life and health of mothers and their young children. Foremost among the measures for which the need is urgent are recognized to be the provision of better housing accommodation and more efficient sanitation, better means for the storage and preparation of food, and the provision of a purer milk supply. These subjects are not discussed in any detail,

[1] Supplement to the Forty-fifth Annual Report of the Local Government Board, 1915-16: Report on Child Mortality at ages 0-5 in England and Wales. [Cd. 8496.] Price, 1s. net.

but special attention is directed to the provision of medical assistance and nursing, as "this is the part of maternity and child welfare work which in the past has received least attention," though it is held to offer great possibilities of saving life and preventing illness and disablement. The Midwives Act and the Notification of Births Act are named as the chief means by which the local authorities can get into relation with the mothers. A long and presumably complete list is given of the measures which public authorities are already authorized to institute, and for which they may receive grants from the Local Government Board covering one half the total expenditure if carried out to the satisfaction of the Board. These measures include provision for medical attendance and nursing both at home and in hospital, not only of expectant mothers but of parturient women and nursing mothers and their children up to the age of five.

No one can be blind to the progress made in some areas, but it is impossible to read the report without regarding the facts which it contains as reflecting most seriously on the efficiency of our health administration, both central and local. Even the measures that are now advocated and supported by grants are in many respects little more than tinkering with the problem.

MEDICAL WAR ORGANIZATION IN AMERICA.

FOR some time previous to the entry of America into the war the medical profession of the United States had been taking its share in the "preparedness campaign," and we learn that the means whereby the most effective service can be rendered to the Federal Government by the profession have now taken definite and concrete form. Last August the Council of National Defence was created by act of Congress for the co-ordination of industries and resources for the national security and welfare. Dr. Franklin H. Martin, of Chicago, whose reputation as a medical organizer is not confined to his own country, was selected by the President to serve on the advisory commission to the Council, and gathered around him a strong medical committee to consider the various medical problems which bear upon national defence. As a result of conferences between this body and the War Department courses of instruction in military medicine were instituted early this year in all the medical schools. A national committee of American physicians was formed twelve months ago by joint action of the five leading professional bodies for the purpose of formulating plans whereby the civilian medical resources of the United States might be ascertained and effectively co-ordinated. In connexion with this central body, which has been hard at work since its inception, county committees are now being set up throughout the States. The idea is that all these medical organizations should co-operate with the Council of National Defence. The medical profession of this country will watch with keen and friendly interest the progress of medical organization for war in the United States, and will learn with pleasure that among the signatories of the appeals to the American people and to the President to fight Germany with the full strength of the nation, issued a short time ago by the American Rights League, appear the names of Dr. Lyman Abbott of New York, Dr. Richard C. Cabot of Boston, Dr. Theodore C. Janeway of Baltimore, Dr. Morton Prince of Boston, and Dr. W. W. Keen of Philadelphia. Classes have been instituted in various centres for training in modern military surgery, and some of the most senior members of the profession in America have not been too proud to attend them. In Philadelphia the course, consisting of twenty lessons, each of three hours, has been attended by about a hundred doctors. Dr. Keen has all along been active on the side of the Allies, and when, in delivering an address to Red Cross women workers the other day, he expressed the wish that the United States would enter the war "as an ally of the Allies" he was applauded to the echo.

VITAL STATISTICS FOR 1915.

THE seventy-eighth annual report of the Registrar-General for England and Wales deals with the year 1915, but contains a few indications with regard to 1916. The marriage-rate for 1915 was 19.5 per 1,000, the highest on record, being 3.6 above the rate in the preceding year and 4.1 above the average in the ten years 1905–14; but the provisional figures for 1916 indicate a return to the average experience in 1905–14. The birth-rate in 1915 was the lowest on record—22 per 1,000; although this rate is 3.5 below the average for the preceding decennium and 1 8 below the rate for 1914, it compares very favourably with the experience of other belligerent countries, but the provisional rate for 1916 is 21.6. The civilian death-rate in 1915 was 15.7 per 1,000; this is 1.2 above the average for the total population in the preceding ten years, but the provisional rate for 1916 is appreciably lower than for 1915. The civilian death-rate was adversely affected by two circumstances: first, the withdrawal by enlistment of a large body of men at an age at which mortality experience is below the average; and, secondly, by the fact that the men remaining in the civil population at this age were, on the whole, much less healthy than those that had been withdrawn. When comparison is made of standardized death-rates, it appears that the civilian death-rate in 1915 exceeded the average rate for the total population in the preceding ten years by only 0.4 per 1,000, and was below the rate in any year before 1907. It appears, therefore, that the mortality of 1915, though slightly exceeding the standard of the immediate past, does so only to an extent which is less than might in the circumstances have been anticipated, and which is, indeed, not outside the range of its normal fluctuation. The infant mortality rate was 110 per 1,000, being 5 per 1,000 above the rate in the preceding year, but below the average for the ten years 1905–14 by the same amount. The provisional infant mortality rate for 1916 shows a decrease to 91 per 1,000 births, the lowest rate on record. The death-rate during 1915 from enteric fever was the lowest on record, but that from influenza was the highest since 1900, and from measles the highest since 1896. There was an abnormally high death-rate from cerebro-spinal fever, and the mortality from measles and diphtheria was above the average of the preceding ten years. Cancer showed a higher mortality than in any other year, judged by the crude or ordinary death-rates, but such a form of statement is unsatisfactory in dealing with the disease, in view of the present constitution of the civilian population. Comparison of standardized death-rates shows that the mortality of both males and females was slightly below that of either of the two preceding years. The mortality from phthisis and from tuberculosis as a whole showed a marked increase among males and a slight increase among females; but here again the fact that enlistment has withdrawn a very large number of healthy males at ages considerably affected by the incidence of tuberculosis must be remembered. The Registrar-General's office has been able to undertake the responsibility of furnishing local mortality statistics to the various sanitary authorities of the country for 1916 and subsequent years, with the view of economizing labour in the local sanitary offices during the war. Should the experiment prove successful, it may be found advantageous to continue the system permanently and so avoid duplication of work which has existed hitherto.

PROFESSIONAL ORGANIZATION.

THE *New Statesman* publishes this week the first part of a special supplement on professional associations, of which we have been favoured with an advance copy. It consists of the first half of a report, prepared by Mr. and Mrs. Sidney Webb for the Fabian Research Department,

dealing with the question, "What is to be learnt from the professional associations of brain workers as to the sphere of control by the vocational organizations?" Under this formidable title the authors publish the results of their investigations into the history and present position of the various professional organizations of the country. Part I deals, among others, with the profession of medicine. After a brief, but fairly adequate, historical survey, in which the various efforts towards medical reform are traced, the authors discuss at some length the nature, powers, and duties of the General Medical Council, and take note of the fact that the National Insurance Acts have set up an additional tribunal to investigate charges of professional misconduct and the like, against medical men on the panel. Voluntary organization of the profession is dealt with at some length, and in a critical spirit. A sketch is given of the great work which the British Medical Association has done for the profession in such matters as the passage of the Medical Acts of 1858 and 1886; the improvement of the status and pay of Poor Law medical officers and medical officers of health; the campaign against "covering," and canvassing "medical aid" institutions, and so forth; and lastly, the concessions to the profession which the Association wrung out of the Government during the passage of the Insurance Acts. Prefacing an analysis of the machinery of the Association the authors give it as their opinion that the "British Medical Association is, alike in its constitution and in its functions, one of the most highly developed and the most efficient of all the British professional organizations," and they conclude this section of the subject thus: "The strength of the British Medical Association, compared with all other voluntary organizations of medical men, lies not only in its great traditions, but also in its status as a scientific and technical society controlling a powerful journal and organizing a popular annual conference, at which science and social intercourse are happily combined." Another section is devoted to an exposition of the professional code of ethics; this is written in a fair but not unduly sympathetic spirit. A long section follows upon the relation between the doctor and the community, or, as Mr. and Mrs. Sidney Webb like to put it, "between what may be regarded as the 'producer' and the 'consumer' of medical services." The innate preference of the medical practitioner for dealing only with individual clients in a strictly personal relation and without control or supervision or interference from outside, which underlies the medical objection to a state medical service, is discussed and criticized from the socialistic standpoint. The authors seem to have persuaded themselves that the hostility of medical practitioners to what they call "scientific management" and to whole-time employment in a graded state service is due to the same motive which causes the industrial manual worker to shy at "scientific management" in the workshop and the mine. Can it be that the Fabians and the new statesmen and stateswomen perceive no essential difference between the relation of doctor to patient and miner to coal-seam? Nevertheless, this section is well worth reading; but the final dissertation on professional exclusiveness is little more than a *post mortem*, since none of its hard sayings apply to conditions of to-day.

SCIENCE IN PEACE AND WAR.

PROFESSOR ERNEST GLYNN has revised and published as a pamphlet[1] the presidential address he gave to the Liverpool Biological Society, on bacteriology and the war, and on the national neglect of natural science. The first part of the address introduces the layman to some of the fundamental facts about micro-organisms and the perpetual struggle between man and microbes, leading up to the subject of bacterial infection of wounds and the germ-borne diseases with which the army has to contend. Professor Glynn's explanation and defence of antityphoid inoculation are clear and easily understandable by the non-medical reader. "Fortunately," he says, "we have appreciated the vast importance of bacteriological science in this war; *when its principles have been properly applied* our armies have won great though silent and bloodless victories." Nevertheless the nation, Professor Glynn maintains, has neglected science as a whole, and he says that this neglect has produced not only disastrous consequences in peace, but is partly responsible for the prolongation of the war. He is convinced that we as a nation do not sufficiently appreciate the "extraordinary importance of scientific methods and of scientific research, and of the application of results of scientific research to commerce, to industry, to war, and to every department of life." With this many will agree regretfully. Professor Glynn, however, sees light on the horizon. In the midst of war the immense value and importance of science and the scientific outlook to the life of the country are beginning to be recognized. This leads him to a comparison between the advantages of what are called "classical" and "modern" educations. In his view it is wholly useless, and a shocking waste of time, for the ordinary boy to acquire a smattering of Greek and Latin to the exclusion of modern languages and the rudiments of science. The war, he says, has compelled the nation to reconsider its whole system of education, and he looks forward to the time, in the near future, when the true aims of education are grasped and acted upon. He concludes his vigorous and thoughtful address with these words, which, we think, express the truth of the matter: "The intellectual contest between nations has become so fierce that we must abandon obsolete educational methods, and become more practical and utilitarian—if we really wish our Empire to survive in the struggle for existence. Above all, we must bring scientific methods, scientific knowledge, and scientific research into every department of life."

[1] *Microbes and the War.* Liverpool and London: C. Tinling and Co., Ltd. Price 6

AN EARLY VIEW ON WOMEN'S FRANCHISE.

MARCELLE TINAYRE, one of the most brilliant French women writers of the day, has unearthed a manifesto issued at Marseilles in 1789, entitled "The claim of the women of Provence to be admitted to the states general." In the account she has given of it in a recent issue of *Le Journal* she describes it as logically conceived, clearly drawn up, and expressed with a force and freedom not unmixed with what she calls a kind of ingenuousness. The three estates of the realm were then clergy, nobles, and the third estate; and the manifesto asked that women should be similarly divided and allowed to elect members to the three chambers in numbers proportional to those given to men. Nuns were to correspond to the clergy, and women of noble birth to the nobles; all the others were to belong to the third estate. They demanded universal suffrage subject to a most significant limitation, which is, perhaps, one of the paragraphs of the document Marcelle Tinayre regards as ingenuous. The manifesto proposed that every woman of 15 years of age or upwards should have the right to vote provided she had "given a citizen to the State." "We believe," these ladies went on, "that this condition is necessary in the interest of social organization, because an innocent, timid young woman, with restricted ideas would not be able to oppose effectively the coarse arguments of our antagonists." Further on, the idea that maternity constitutes an inalienable claim to the possession of all the rights of a citizen is, we are told, ably developed. After criticizing the education then open to women and the few opportunities then afforded to them of serving the State, the women of Provence set out what they described as a precise idea on the population question and the means of increasing the number of citizens. "No one," they said, "will deny that the true riches of a state is its population. It follows that if a nation refuses to increase its population, it refuses to

increase its riches." Finally, they suggested penalties on celibates; such men should pay double taxes and no public employment should be open to "this parasitic class, which lives at the expense of fathers of families, and usurps wealth which ought to belong to future generations." The manifesto, which seems to have been printed secretly, was promptly suppressed, and the General Assembly of 1789 took no notice of the claims of the women of Provence; but they were pioneers, although their suggestion that only those women should have the vote who had presented at least one citizen to the State has not found favour with their sisters of to-day.

TUBERCULOSIS AND LONGEVITY.

THE truth of the paradox that the secret of long life is to suffer from an incurable illness and to know how to take care of yourself is well illustrated by the story[1] of Denmark's oldest doctor, F. F. Ulrik. He was born on April 16th, 1818, and he died on February 20th, 1917. At the age of 24 he developed signs of pulmonary tuberculosis, and having finished his course of practical studies at a general hospital, took the advice of his medical superintendent and went to live in the country. Here he acquired a large practice, necessitating long journeys by road. The attacks of haemoptysis from which he had been suffering ceased, but he did not return to Copenhagen till he was 46. He led an active life, and contributed largely to the sanitary reform of Copenhagen, where he was a member of the Health Board for twenty years. He was confined to his bed only a couple of days before his death.

THE FUTURE OF THE BRITISH X-RAY INDUSTRY.

IN the discussion at the Röntgen Society on April 3rd on the future of the British *x*-ray industry Mr. R. S. Wright, speaking from the manufacturer's point of view, asserted that the backward condition of the electro-medical industry in the United Kingdom, as instanced by the fact that one-half or two thirds of the apparatus used in this country was of foreign manufacture, was due largely to the prejudices of medical men. The notion was current in the medical profession that whatever happened to have been made in Britain was necessarily inferior and out of date. British medical men had in too many cases believed that they must adopt everything that German medical men adopted, and that German methods must be best because they were German, with the consequence that if an English maker showed originality, the outcome of his enterprise was not taken up until the same kind of thing had found endorsement in Germany. The speaker instanced the Snook interrupterless machine, which was first placed on the European market by a British firm, but was never bought in Britain until, some long time afterwards, it became known that German manufacturers were making it and German *x*-ray workers installing it; even then two-thirds of the machines were obtained from Germany. Sir James Mackenzie Davidson, while admitting some of these contentions so far as they had reference to what had been, pointed out that in the case of the Snook apparatus the fact that it came into favour at a later stage was not entirely due to its reintroduction from the Continent. When the Snook machine first came out there were very few tubes that would stand the energy. In the process of tube development a stage had now been reached in which a tube, the Coolidge, quite equal to the energy which the Snook machine put in, had been constructed, and no doubt that form of machine would come into more general employment. The German *x*-ray tube, he thought, had at one time an advantage over tubes made elsewhere, but German superiority in this respect had already passed, and our American allies were now making a tube which would hold its own against any German rival for many a day. Professor A. W. Porter, F.R.S., thought that the great need was for research laboratories; they were, however, beyond the capacity of a small firm, and he suggested a combination of firms for this purpose. There was already provision in the physical laboratories attached to the universities for the preliminary training of men to undertake research, although the final training could not be given in any academic institution, but only in the works themselves. Captain G. W. C. Kaye laid stress upon the comparative poverty of British work on the applied side. In pure physics British workers held a record of which none need be ashamed, but on the applied side there had been few pioneers. He, too, hoped to see an *x*-ray institute, the particular province of which would be to thresh out practical problems for the manufacturer.

[1] *Ugeskrift for Laeger*, March 1st, 1917.

THE Svenska Läkaresällskapet (the Swedish Physicians' Society) has elected Colonel Robert Jones, C.B., Inspector of Military Orthopaedics, to be a foreign member. The honour was conferred at the instance of Dr. Haglund, professor of orthopaedics, Stockholm, supported by the professor of surgery, Dr. John Berg, and by Dr. Henning Waldenström, lecturer on orthopaedics. By this election Swedish surgeons desire in these dark times to show to their colleagues in the countries at war, who are fighting against the terrible individual consequences of the war, how greatly their work is valued.

THE Council of the Medical Society of London has awarded the Fothergillian Medal for 1917 to Sir Leonard Rogers, I.M.S., C.I.E., F.R.S., of the Medical College, Calcutta, in consideration of his work on dysenteries, their differentiation and treatment.

Medical Notes in Parliament.

THE House of Commons resumed on Tuesday, when the bill to prolong the life of Parliament was read a second time after a division.

New Warrant for Army Pensions.—On the same day Mr. Barnes (Pensions Minister) gave some particulars of what has already been done under the new warrant for pensions or gratuities for soldiers. Up to April 11th, or one week after the warrant came into operation, the department had on its lists 13,000 applications from soldiers and sailors. There had not been time to analyse them all—to ascertain, for example, how many had earned pensions and how many gratuities. There were 475 cases of widows of men whose disease had been aggravated by the war. Under the old warrant these women were entitled only to about 5s. a week, but already the department had dealt with 114 of these widows by provision under the new scheme. There were 1,229 widows who had no claim under the old warrant. Ninety-eight of these cases had been considered, and pensions had been given in 87 cases. In this first week, also, a few cases of parents had been dealt with. Thirty-four out of 38 had benefited, the benefit averaging 3s. 2d. a week. The number of dependants on the list was 2,819. Of these, 41 cases had been considered, with the result that 37 had been granted pensions, and 4 rejected. Mr. Barnes claimed, therefore, that the question of an Appeal Court sank into comparative insignificance. A very large number of the men who had been denied pensions would get them; some at once, and others would get gratuities. A very large number of widows would be lifted up very appreciably in the scale of allowances and pensions. It was intended that every man whose disease had been aggravated by the war should get a pension, and that every widow entitled to it should get a pension. All those other men discharged as medically unfit should get a more or less substantial gratuity. On April 18th Sir Edwin Cornwall stated that arrangements had been come to between the Insurance Commissioners and the Pensions Minister whereby no liability to pay for soldiers' disablement would fall upon the Insurance Fund.

THE WAR.

AMBULANCE LIGHT RAILWAY TROLLEYS.

THE ambulance trolleys for light railways used by the Royal Army Medical Corps have attracted the attention of French observers during the advance at Arras. As is well known, the engineers have laid down light, narrow-gauge railways in many areas, and the possibility of using them for the transport of wounded was very soon appreciated. The mention in General Nivelle's congratulatory telegram to Sir Douglas Haig, of the First and Third armies, and the Field Marshal's acknowledgement on behalf of those armies, permits us to say that the trolley car has been in use in these armies, and probably in others, for the last year or so. The cars are of very simple construction, lightly but strongly made. Each has room for two wounded on stretchers below, and two on stretchers resting on the supports above; they can be easily handled by one or two men, and, where a light railway is available, afford an extremely smooth and rapid mode of transit from the advanced dressing station to the field ambulance.

Two light railway ambulance trolleys.

One great advantage is that the light railway often penetrates into areas where the roads, having been cut up by shells and heavy traffic, are extremely bad. With the best constructed ambulance in the world and the most careful drivers a certain amount of jolting is inevitable on such roads, but the ambulance trolley on the light railway affords a smooth and easy means of transport, diminishing suffering and improving the ultimate prospect of recovery in serious wounds.

SURGERY IN A GERMAN BASE HOSPITAL.

HERMANN FISCHER, of the German Hospital, New York, records (*Amer. Journ. of Surgery*, January, 1917) an experience of six months in a German base hospital. He was with the first party sent to Germany under the auspices of the American Physicians' Expedition Committee, and was assigned for duty to the Reserve Lazarett at Oppeln in Lower Silesia, one hour by automobile from Czenstochowo, the first important Russian town across the border. The number of cases treated by the expedition from October 18th, 1915, to March 31st, 1916, was 727. Of these 493 were cases of injury by shot and shell. The rest were simple fractures, hernias, appendicitis, and minor surgical affections sent into hospital from the barracks in the town. There was no case of wound by bayonet or other cutting weapon. Among the 493 wounded soldiers 10 had bullet wounds of the head, with injury of the brain, 4 of the spine, with injury to the spinal cord, and 22 of the head, face, and neck, without injury to the central nervous system; 74 were shot through the chest, abdomen, and pelvis, and 101 were wounded in the upper, 264 in the lower, extremity. Fourteen men suffered from paralysis of peripheral nerves of the upper and lower limbs as the result of wounds of the median, ulnar, radial, sciatic and peroneal nerves. Only three gunshot wounds of the large vessels were seen, resulting in aneurysm of the femoral, subclavian, and innominate arteries respectively, the last being an arterio-venous aneurysm. Of these, only the femoral case was operated upon; in the others the symptoms were so slight that it was thought best to leave them alone.

Skull Wounds.

The immediate mortality of skull wounds was high, but a good many reached the field hospital quickly, usually one or two hours after the infliction of the wound. Diametral wounds had the highest mortality on account of the great destruction of brain substance and the haemorrhage; only two cases recovered. All skull injuries were operated on at once in the field hospitals. In slight cases, in which the cranial wound and the defect in the dura were small, the edges of the wound were excised, splinters of bone and other foreign matter removed, and a tampon, covering the defect in the dura, lightly inserted. This treatment was successful in most cases. The danger of infection of the subdural and arachnoid space was not great, because the brain prolapsed somewhat through the dural rent and shut off the subdural space. In tangential and segmental wounds, in which destruction of bone and brain substance was considerable, the flow of cerebro-spinal fluid and the loss of brain substance required different treatment. The subdural and arachnoid spaces being wide open the brain did not protrude on account of loss of substance. In these cases ½ to 1 per cent. novocain, with the addition of twenty drops of adrenalin solution 1 in 1,000, was injected into the scalp, producing local anaesthesia and rendering preliminary haemostatic suture unnecessary; it also controlled bleeding from the brain, which was often severe. The ragged and contused edges of the scalp were excised, and all splinters of bone, destroyed brain and foreign matter carefully removed. When the bullet was lodged in the brain the canal was explored and the bullet, if easily accessible, removed. The loss of brain substance was often considerable; the defect was filled up by transplantation of fat, usually subcutaneous fat from the thigh. The defect in the dura was closed by free transplantation of fascia, the smooth glistening surface, normally in contact with the muscle, being turned towards the dura. The transplanted fascia was made to overlap the dural edges by at least ½ to 1 cm. and was fastened to the dura with fine sutures. The scalp wound was closed. To prevent haematoma a small rubber-tissue drain was inserted between the sutures at the angle of the wound. At the beginning of the war most skull wounds had been treated by the open method with the result that infection occurred in most cases. Many surgeons had had excellent results from primary suture of such injuries, but only fresh cases in which there was relatively little soiling of the wound gave hope of a favourable result. Cases received on the second day or later were treated by the open method.

Injuries of Inferior Maxilla.

In former wars the mortality of injuries of this kind has been as high as 50 per cent. In the present war a number of special hospitals have been established in Germany where dentists co-operate with surgeons. It is held that all loose fragments of bone should be removed, but each piece still in connexion with the periosteum should be

saved, even if suppuration be present. Interdental splints of various shapes were used to hold the fragments. Plastic operations were performed when necessary after the wounds were clean.

Wounds of Neck, Chest, Abdomen, and Pelvis.

Among the bullet wounds of the chest only two needed surgical intervention. One of these had a large haemothorax, a good deal of dyspnoea, and some fever. The haemothorax was aspirated and bloody fluid withdrawn; the man recovered in about five weeks. The other was a shell wound of the back, with complicated fractures of the sixth to the ninth ribs, and injury of the lower lobe of the lung. The man had undergone operation in a field hospital, and was admitted to the base hospital with a large old empyema cavity. Thoracoplasty gave a good result. Among the chest wounds there were two cases of traumatic aneurysm. One was a spurious aneurysm of the second portion of the subclavian; in the second the man had been shot through the chest near the jugular. A loud bruit was heard all over the chest, and there was distinct pulsation just above the sterno-clavicular joint. It was thought probable that it was an arterio-venous aneurysm of the innominate artery and vein. In both cases the general condition was excellent, and there were no subjective symptoms; there was no indication for surgical interference at the time. Bullet wounds of the chest, if no large vessels were injured and no infection in the pleura or lung was present, were treated successfully by morphine and the application of an ice-bag. Most of the chest injuries were followed by bloody exudate in the pleural cavity, which in a fair proportion was absorbed within the first two weeks. In cases which came to autopsy there were found in the lungs small areas of necrosis with only slight signs of inflammatory reaction in the lung tissue. Bloody expectoration was always present; in the majority of cases it stopped after three or four days. The treatment was therefore conservative except in the case of shell injuries; most of these were quickly fatal, and comparatively few reached the surgeon. The mortality of the abdominal wounds was high, and the prognosis particularly bad under conservative treatment. The experience of this war, on the German side, had shown that immediate laparotomy gave the best results.

Wounds of Bladder.

There were five gunshot wounds of the bladder. All had been operated on in a field hospital by suprapubic cystotomy, or came with a permanent catheter. Two of the men had a perivesicular abscess communicating with the bladder, which healed under irrigations; one had a recto-vesical fistula which an operation failed to close.

Bullet and Shell Wounds of Upper and Lower Extremities.

The expedition treated 101 injuries of the arms and shoulder and 264 of the thigh and leg. The wound of entry was usually small, whereas that of exit was a large gaping opening with laceration in bones (tibia, radius, ulna) situated immediately under the skin. In injuries of the thigh the aperture of exit was often not much larger than the wound of entrance, but near the bone the soft parts were often lacerated to such an extent that large cavities were formed in which lay fragments carried into the soft parts by the impact of the bullet. Roughly speaking, types of wounds were distinguished: (1) The bullet had grazed or penetrated the bone without disturbing its continuity; (2) the impact of the bullet had caused a fracture of the bone without comminution; (3) the bullet had caused widespread shattering and splintering of the bone with innumerable fragments and considerable laceration of soft parts. The shell wounds were distinguished by the severity of the comminution and laceration. All abscesses and pockets were freely laid open and bone fragments whose nutrition seemed to be impaired removed; but discrimination was necessary, since a good many of the fragments survived in spite of infection. In some, fractures consolidated where the destruction of bone was so great that restoration seemed hopeless. The wounds were drained with rubber tubing and loose gauze dressings were applied.

The plaster dressing, the wound area being left open and the gap bridged with iron bands, was looked upon as the ideal method of immobilization which was the sovereign means of combating fever; time and again the temperature fell to normal two or three days after the application of the plaster. It was found desirable to use extension with caution in severe infections, and not to attempt forcible reduction of the fragments until the wounds were healed and the fracture consolidated. When the deformity and shortening were great enough to impair function osteotomy and nail extension was the procedure preferred. In fracture of the tibia and fibula, where extension was indicated, Fischer used a wire pushed through the soft parts immediately behind the tendo Achillis and resting on the os calcis. This procedure, he says, is very simple and can be performed under local anaesthesia. In bullet wounds of the knee-joint with severe infection and destruction of the condyles of the femur or the head of the tibia, he opened the joint by Mayo's method, removed the destroyed bone, and put up the knee flexed at right angles. After subsidence of the infection, and when the wound was covered with healthy granulations, a secondary resection was done. Where infection of the bone had become chronic, Fischer and his colleagues were guided by the rules for the treatment of chronic osteomyelitis. Although the infections were severe and the comminution of bone great, pseudoarthrosis was not so frequent as might have been expected.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Lost at Sea.

DR. A. R. STEEL.

Dr. Arthur Robert Steel, surgeon in the Admiralty Transport Service, was drowned on February 28th, when the transport to which he was surgeon was sunk in a collision in the Channel, with a South African labour battalion on board. His body was picked up on some floating wreckage on April 3rd and identified at an inquest. He was educated at University College, London, and at Edinburgh, where he took the diplomas of L.R.C.S. and L.R.C.P. in 1835. He was a member of the Sunderland Division of the British Medical Association, and before the war was in practice at Thornley, co. Durham.

ARMY.

Killed in Action.

CAPTAIN M. R. HUGHES, A.A.M.C.

Captain M. R. Hughes, A.A.M.C., killed in France on March 20th, was 25 years of age. He matriculated from Wesley College, Melbourne, and entered Queen's College at the Melbourne University, graduated M.B., B.S. with honours in 1915, and qualified for appointment as one of the resident medical staff of the Melbourne Hospital. At the completion of his term at this hospital he joined the Australian Imperial Force. After his arrival in England, he was transferred to France as medical officer to an Australian infantry battalion, and was serving in this capacity when he was killed. His death will be deeply regretted by a large circle of friends amongst the younger members of the profession in Victoria.

Captain G. B. Bailey, A.A.M.C.

Died on Service.

CAPTAIN J. McC. ORME, R.A.M.C.

Captain John McCallum Orme, R.A.M.C., was reported as having died on service, in the casualty list published on April 13th. He was the son of the Rev. Mr. Orme, Minister of Portree, Skye, and was educated at Edinburgh University, where he graduated M.B. and C.M. in 1915. He took a commission as lieutenant in the Special Reserve of the R.A.M.C. on May 13th, 1914, was called out for service on April 16th, 1915, and was promoted to captain six months later. On November 25th, 1916, he was gazetted as a recipient of the Military Cross for the following services:

He tended and dressed the wounded under very heavy fire, displaying great courage and determination. Later, after his battalion had been relieved, he remained behind evacuating the wounded.

Lost at Sea.

The loss of two more hospital ships was announced on April 14th. The *Gloucester Castle*, 7,999 tons, formerly of the Union-Castle line, was torpedoed and sunk by a German submarine while bringing a shipload of wounded

from France on the night of March 30th-31st. Fortunately all the wounded, some 600, were rescued by other ships, and only two lives were lost, members of the engine-room staff. The *Salta*, 7,284 tons, struck a mine and sank on April 10th while crossing the Channel to France. As she was outward bound, she had no wounded on board, but 51 lives were lost, 5 medical officers, 8 nurses, and 38 rank and file of the R.A.M.C.

On April 17th the following names were published as "missing, believed drowned": Captains J. R. Gyllencreutz, G. C. B. Hawes, and T. G. S. Hodson, and Lieutenants H. G. Smith and J. Naylor of the R.A.M.C.; and Matron E. M. Dawson, Sisters T. Cruikshank, E. L. Fryster, and G. Jones, Staff Nurses C. McAlister, A. G. Mann, F. Mason, and J. Roberts, all of Queen Alexandra's Imperial Military Nursing Service Reserve.

CAPTAIN J. R. GYLLENCREUTZ, R.A.M.C.

Captain James Randolph Gyllencreutz was educated at St. Thomas's Hospital, and took the M.R.C.S. and L.R.C.P.Lond. in 1908. After filling the posts of senior house-surgeon of the Royal Hospital, Portsmouth, and of second assistant at Brentford Infirmary, he became senior assistant at Wandsworth Infirmary. He took a temporary commission as lieutenant in the R.A.M.C. on September 19th, 1914, and was promoted to captain on completion of one year's service.

CAPTAIN G. C. B. HAWES.

Captain Godfrey Charles Browne Hawes was educated at St. George's Hospital, and took the L.S.A. in 1893, the M.R.C.S. and L.R.C.P.Lond. in 1894. After acting as assistant house-physician, assistant medical registrar, and assistant in the skin department at St. George's Hospital, he went into practice at Pangbourne, in Berkshire, where he was medical officer to the Post Office and Board of Education, certifying factory surgeon, honorary medical assistant to the Royal Humane Society, and a J.P. for Berkshire. He took a temporary commission as lieutenant in the R.A.M.C. on March 1st, 1916, and was promoted to captain a year later.

CAPTAIN T. G. S. HODSON, R.A.M.C.

Captain Thomas George Smith Hodson, R.A.M.C., was born in 1864, the son of the late Mr. William Hodson of Downhills, Middlesex. He was educated privately and at the London Hospital, and took the degree of M.B.Durham and the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1893, and the M.D.Durham in 1898. He was formerly in practice at Buxton and Bitterne, Hants, where he held several public appointments. He subsequently practised in London at Wimpole Street. On June 1st, 1915, he joined the R.A.M.C., and was for some time attached to the Royal Victoria Hospital, Netley, and afterwards served on the recruiting medical board at Bristol. Returning to Netley, he answered the call for volunteers for transport work, and was attached to the *Carisbrooke Castle*, and only this month was appointed to the *Salta*, on which he had been four days when she was destroyed in the Channel on her first trip to France after being refitted. Captain Hodson married in 1906 Margaret Mary Mallalien, daughter of the late Dr. Samuel Hyde, of Buxton, Derbyshire, and leaves two daughters and one son.

LIEUTENANT H. G. SMITH, R.A.M.C.

Lieutenant Henry Graham Smith was educated at Edinburgh, where he took the L.R.C.S. in 1883 and the L.R.C.P. in 1884, also the L.D.S. in 1886. He was in practice at Carnforth, Lancashire, till he took a temporary commission in the R.A.M.C. last July. He had previously served as surgeon of H.M. transport *Pancras*.

LIEUTENANT J. NAYLOR, R.A.M.C.

Lieutenant Joseph Naylor of Tipton Green, Staffordshire, was educated at St. Bartholomew's Hospital, taking the M.R.C.S. and L.R.C.P.Lond. in 1889, and afterwards acting as assistant house-surgeon of Derbyshire General Infirmary before he went into practice at Tipton Green, where he was certifying factory surgeon.

Wounded.

Captain W. L. Cassells, R.A.M.C. (temporary).
Captain C. F. Fischel, R.A.M.C. (temporary).
Captain W. N. Gilmour, M.C., R.A.M.C. (temporary).
Captain W. M. Penny, R.A.M.C. (temporary).
Captain R. P. Rosser, R.A.M.C. (temporary).
Captain A. A. Rutherford, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Gray, George G., Second Lieutenant Oxford and Bucks Light Infantry, eldest son of Dr. Gray, of Hastings, killed April 11th. His commission was dated December 22nd, 1914.

Sanders, Archibald Merton, Second Lieutenant King's Own Scottish Borderers, only son of Dr. Sanders, of Lochmaben, died of wounds on April 9th, aged 19. He was a medical student before joining.

Woods, Frank C., Lieutenant Queen's Royal West Surrey Regiment, formerly the 2nd Foot, younger son of the late Surgeon-Major Woods, R.A.M.C., killed recently, aged 29. He got his commission on August 15th, 1914.

NOTES.

RE-EXAMINATION OF EXCEPTED MEN.

THE Military Service (Review of Exceptions) Act, which received the Royal Assent on April 5th, brings within the operations of the Military Service Act, 1916, men who have for various reasons been excepted from the operation of that Act, and gives the Army Council power to call up such men for examination. Unless a man has been properly rejected or discharged within six months, it applies to a member of the Territorial Force not suited for foreign service, to a man who has left or been discharged in consequence of disablement or ill health, and to a man who has been previously rejected on any ground either after offering himself for enlistment or after becoming subject to the Military Service Act. Persons engaged in agricultural work certified to be of national importance are exempted from the provisions of the new Act, as is also any officer or man who has left or been discharged in consequence of disablement if the disablement has been certified under the authority of the Admiralty or the Army Council to be the result of wounds, including injury from poisonous gas received in action, or in consequence of neurasthenia or functional disease certified by a special medical board to be the result of naval or military service in the present war. If a man on this occasion is not accepted for service he is not to be called on again for six months, and if certified to be permanently and totally disabled he is to receive a final discharge. The Act does not apply to any man who has attained the age of 41 years before the appointed date.

The Local Government Board has issued a circular of instructions to local and appeal tribunals as to the administration of the new Act. The circular contains a special new instruction in relation to voluntarily attested men, rejected but not treated as discharged, the effect of which is that any attested man may make an application, not only on the grounds open generally to attested men, but also on the ground of ill health or infirmity, or of conscientious objection; but he must make his application before the appointed date, although a late application may in certain circumstances be entertained. The President of the Local Government Board appeals to tribunals to deal with any applications consequent on the passing of the new Act as speedily as possible, the whole object of the Act being to provide quickly the half million men between now and July next which the Chief of the General Staff announced the army urgently needed. The circular of the Local Government Board points out that tribunals must bear fully in mind that the need of the army for all men of military age at the earliest possible date is pressing; that for men in medical categories A and B1 under 31 years of age exemption on grounds of employment is not, as a rule, justified; and that, as regards claims on the ground of hardship, the standards which must now be adopted are necessarily much stricter than in the early days of the war.

The necessary medical examination or re-examination will be made, we understand, by existing medical boards, which, as Lord Derby stated in the House of Lords when the new Act was under discussion, consist each of two civilian and three military doctors. Lord Derby, it will be remembered, undertook that any certificate from the man's own doctor would be taken into consideration by the medical board, but stated that the final decision would rest solely with that board.

Judging from a letter we have received from a correspondent in France the work of these boards is causing a certain amount of criticism there, and he suggests that it would be improved by bringing home, to act upon the boards, a sufficient number of medical officers having experience in the British Expeditionary Force, who would know the work the men are required to do, and the conditions in which they live. Our correspondent believes that though such a transfer of medical officers would deplete the numbers abroad it would, in the long run, be a gain to the army.

A MOTOR DENTAL SURGERY FOR ARMY SERVICE.

A motor ambulance for dental surgery presented by Messrs. de Trey and Company to the Army Medical Service for use with the British troops in France has lately been placed for private inspection in the courtyard of Devonshire House. It will accommodate at once two patients, two dentists, and a mechanic; the chairs and tables run upon rails, the shelves and working bench are collapsible, and provision is made for using the rear platform when required, so that space is economized to the utmost. The ambulance is well lighted, both naturally and artificially, and a good supply of water is obtained from a reservoir on the top of the car. Lieutenant Parker Cater, G.B.C., 36 Corps, Armée Française, designed and organized the ambulance at the request of the War Office.

England and Wales.

THE HOUSING PROBLEM AND A MINISTRY OF HEALTH.

LORD RHONDDA, President of the Local Government Board, received on April 13th a deputation from the National Associations of Insurance Committees for England and Wales with reference to housing conditions in relation to the administration of sanatorium benefit and the establishment of one central health authority. Mr. W. Huddart, President of the Insurance Association, submitted a memorandum upon the conditions of the working classes and their effect upon health, from which it appeared that in overcrowded areas the applications for sanatorium benefit were greatly in excess of those in areas where better housing conditions existed. Mr. G. W. Bartlett, Vice-President, said that any effort to remedy the existing state of things would have the hearty support of the insurance committees, but legislation should include provision for compelling local authorities to take action. Mr. Huddart then introduced the question of the establishment of a Ministry of Health. He stated that the conviction of those who were concerned both in insurance committee work and local health matters was that the absence of central co-ordination was fatal to their efforts, constituting a stumbling-block to progress and a bar to efficiency. He asked Lord Rhondda to give them an outline of his intentions regarding the establishment of a Ministry of Health.

Lord Rhondda said that he had hoped to be in a position to give definite information on the points laid before him by the deputation, but unfortunately he was not, as the matter was under consideration by the Government. He was himself heartily in favour of the establishment of some central authority, and was pressing his views upon the Government. The Local Government Board was fully aware of the importance and urgency of the housing problem, which he regarded as the biggest matter now before the department, but it was very difficult and complicated, and the more he went into it the more difficult it seemed; but difficult or not, it had to be taken in hand by the State at once. During war time very little could be done in the way of actual erection of houses, but the department was fully alive to the close bearing of that work upon health in the home. It was easy to trace the relation between infant mortality and the rate of mortality throughout life to overcrowding. He hoped the Government would soon come to a decision upon the question raised by the deputation. His own plan was to build up and construct upon existing organizations rather than to pull them down. He had never had any idea of abolishing the local insurance committees and local health authorities, whose co-operation and assistance he wanted. He hoped that when the Ministry of Health was established it would largely succeed in removing the stigma of pauperism. Although he held personal views as to the big question of extension of medical benefits to uninsured persons, he would rather not express them at present. Mr. Hayes Fisher, Parliamentary Secretary to the Local Government Board, said that after the war there would be a shortage of half a million houses in England and Wales, and the department was fully alive to the importance of the problem involved. He was of opinion that many millions might be usefully spent by the State on housing for the working classes. The return in improved health would be well worth the outlay, and the State might well come to the aid of local authorities. The important thing was to have one central health authority, but even so a great deal could advantageously be left to the work of the local authorities.

The conference of approved societies, insurance committees, and other interests concerned, which was to have been held on April 16th at the Central Hall, Westminster, in order to discuss the establishment of a Ministry of Health, did not take place. The meeting had been arranged by the Joint Committee of approved societies, and Sir Edwin Cornwall, M.P., Chairman of the National Health Insurance Joint Committee, was to have addressed it.

TUBERCULOSIS IN SOMERSETSHIRE.

The report of the medical officer of health for the county of Somerset for the year 1915 contains several points of interest. Although prevented by reason of the war from proceeding with larger schemes a good deal has been done. A hospital with 20 beds has been opened at Taunton on ground adjoining the Isolation Hospital, the authorities of which have undertaken the nursing and feeding of the tuberculous cases under an arrangement with the county council. The system of small wards with only one, or at most two, beds has been adopted and two shelters have been provided. Advanced cases have been specially catered for. This plan is worthy of note. The custom of dealing with the early and the advanced case in the same institution is contrary to general knowledge and common sense. A comprehensive scheme for home visitation and after-care has been started and the work is done by volunteers, only administrative expenses being paid for. Notification has not been carried out in the county with any approach to completeness, but the death-rate statistics for the last fifteen years prove that no material change has taken place. In fact, the figures for 1915 are almost identical with those of 1901. Many tables are presented to exhibit the actual numbers dealt with under various aspects, but the ultimate results of treatment, as expressed in present capacity for work, remain about the same as heretofore, and it may be roughly stated that about half of the cases treated have been restored to working power for longer or shorter periods, but the figures differ considerably in the respective years.

Scotland.

THE Joint Board of Examiners of the Scottish Universities has made a change with regard to the exemption from certain preliminary examinations of candidates from British dominions, colonies, dependencies, and protectorates. Hitherto such candidates have been exempted from the preliminary examination in arts, in science, and in medicine, if they presented evidence that they had passed examinations which would admit them to universities or technical colleges in the dominion, colony, dependency, or protectorate. The Board has now resolved that in and after the academical year 1919–20 this exemption shall not include English in the case of candidates whose native language is other than English. Such candidates will be required to pass an examination in English.

TREATMENT AND TRAINING OF THE DISABLED.

A conference in Edinburgh, presided over by the Lord Provost and attended by delegates from thirty-five of the forty-four local pensions committees in Scotland, was addressed by Mr. Barnes (Minister of Pensions), who began by paying a tribute to the work which was being done by the local committees set up by the Act of 1915. The sum distributed through them amounted to nearly £100,000,000 a year—namely, £72,000,000 in separation allowances and £26,000,000 under the new pensions warrant, which has just come into force. He would resist the granting of pensions to men alleged to have been broken in the war, but not, in fact, so broken; they would receive a gratuity. It was the man who had fought and suffered, who came back diseased in body, broken in limb, and very often weakened in will, who deserved every consideration. Of the 310 local committees probably 270 worked in small areas in which there were no technical colleges or other suitable institutions for treatment and training. The Pensions Ministry had arranged with the War Office that such a man should be retained in a military hospital as long as it was possible to keep him as an in-patient; included in the treatment he received there would be curative training adapted to form the initial stage of subsequent industrial training after his discharge. After a man had been invalided out of the army by a medical board he would still be retained in a military hospital for three weeks, which would allow time for arrangements to be made between the man and the committee. The man would receive a card containing particulars with regard to his physical state of health and the treatment necessary for him, and a duplicate would be sent to the committee of the district in which he intended to reside. Further, the army authorities had agreed to take a man back for any special in-patient treatment he might require. There had been a proposal to form one national committee for Scotland, but, although that might be

possible in the future, it was considered wiser at present to form joint committees for large areas. It was proposed that the south-west of Scotland should form one area; that Edinburgh should be the centre for a south-east area down the east coast and including Stirling to the borders; a central area would have Dundee or Perth as its centre, and Aberdeen would be the centre for the northern counties. It would be possible for the committees to exercise a combination of compulsion and conciliation. The treatment would be prescribed by the doctors; wide use would be made of orthopaedic institutions, and some method of compulsion would be applied to get men to undergo treatment. Provision would be made for their dependants and all necessary expenses met. Full pensions and separation allowances would be made during the training period, and at its end a pension of 5s. for each week would be paid. No inquiries afterwards would be made as to a man's earnings or earning capacity, and the pension would not be reduced. The principle would be to say to a man, "Go and earn as much as you like, and we will help you to earn more." He believed that much could be done by pooling facilities and enabling men to take a new place in life. Sir A. Griffith-Boscawen, who also spoke, emphasized the point that a man's pension would be fixed solely with regard to his physical state, no account being taken of his earnings; everything, however, should be done to induce men to undergo treatment and training, and it would be for the public to see that adequate facilities were provided in every part of the country. The scheme outlined by Mr. Barnes to divide Scotland into four areas was adopted unanimously.

Ireland.

GRADED SCALES OF SALARIES FOR POOR LAW MEDICAL OFFICERS.

AT a recent meeting of the Monaghan Board of Guardians Dr. J. T. Elliott and Dr. T. J. Leonard attended on behalf of the doctors of the union, and requested the board to fix a graded scale of salaries for its medical officers. Dr. Elliott, in addressing the guardians, said that the increase would be only a small tax on the ratepayers. He pointed out that the total amount paid in salaries to the six Poor Law medical officers of the union was £685 a year. Half of this was refunded by the Treasury, leaving £342 10s., and from this a still further deduction is to be made, since £88 16s. 6d. out of estate duty, £69 11s. 6d. from local taxation account, and about £50 from the agricultural grant, were given towards the payment of these salaries. This left about £135 to be raised from the local rates for the salaries of the six union medical officers, or a little over a ¼d. in the £ on the ratepayers of the Monaghan Union. Dr. Elliott said that the proposed increase in the salaries of the doctors would only cost, in the case of a farmer of £70 valuation, 2s. 6d. a year for the six doctors in the union, or 5d. extra for the dispensary doctor of any particular district. Dr. Elliott did not believe there was any ratepayer in the Monaghan Union who would grudge to pay, as an increase of salary, 5d. extra in the year to the doctor on whom, before the middle of the night, he might be depending to save his life or the life of his wife or of his children. The guardians, with one dissentient, agreed to increase the present salary by quinquennial increments of £10 until a maximum was reached of £160 a year for the Monaghan, Kilmore, Scotstown, and Castleshane districts, the maximum salary of Emyvale district to be £180 and the union hospital £125 a year, all increases to be made retrospective.

BOARDS OF GUARDIANS AND LOCUMTENENTS OF MILITARY AGE.

At the last meeting of the Rathdown Board of Guardians a letter was read from their solicitor with reference to instructions received about taking proceedings against the Local Government Board to show cause why it refused to sanction the appointment of Dr. Boland, because he was of military age, as locumtenent in Blackrock during the illness of Dr. Boyce. After some discussion the guardians unanimously resolved to summon a special meeting to consider the letter and the question of the Local Government Board's refusal before final instructions were issued to the solicitor, who was told not to proceed further in the case until after this meeting.

The Local Government Board has written to the guardians of the Ballina Union stating that it appeared that Dr. E. Walsh was employed recently as temporary medical officer of the workhouse, and that the objection to the employment of Dr. Walsh in the Ballina dispensary district, owing to his being of military age, applied also to his employment as temporary medical officer of the workhouse.

The Local Government Board has sanctioned the payment of £1 1s. a day for seven days to Dr. Murray, Clonmel Union, for acting as temporary medical officer at Kilsheelan, instead of the amount mentioned in its letter of January 10th. The Board states that it has given its sanction with much reluctance in this case, and requests that it may not be regarded as a precedent for any payment in future in excess of the scale fee of £4 4s. a week.

Correspondence.

THE CONFERENCE WITH LORD RHONDDA.

SIR,—I notice in your issue of April 14th a letter signed "Scrutator," which severely criticizes the action of the British Medical Association in supporting Lord Rhondda's scheme for a Health Ministry.

Your correspondent bases his criticisms on two points, each of which he considers bound to be adversely affected by the scheme in question—namely, the fact that we have got to win the war, and the fact that we shall afterwards have to pay for it.

With reference to the first of these points, he considers that "a general upheaval in health administration" is likely to militate against our winning the war; he does not show in what way the simplification and co-ordination of the various health movements now scattered over six Government departments (a system which the largest party in the House of Commons has publicly stigmatized as "a guarantee of practical waste and inefficiency") into one department, is to produce the upheaval which he fears. Further on, however, he mentions what is apparently to him the gravest danger, the raising of the insurance question; and it is surely pertinent to ask whether your nameless correspondent is a practitioner on the panel? If so (and the implication is to the contrary), is he satisfied that he should be asked to provide for the physical welfare of his insured patients without any provision whatever being made for their institutional or special treatment (apart from tuberculosis and venereal disease, each in a separate department), or for the hundred-and-one other aids to treatment and diagnosis by the general practitioner which are at the command of his better class private patients? If so, he is easily satisfied; if not, why should the community and the profession wait until the end of Armageddon or the coming of Utopia before endeavouring to get things straightened out? Russia has not waited; why should we?

In the second place, your correspondent begs the question; he gives you the debit side, but he allows nothing to the credit side except a "problematical saving of lives." It is to be feared that if either the authorities or the profession were to view such life-saving problems in the casual and short-sighted manner of your correspondent our chances of winning the war would have been reduced to a minimum by the *Bacillus typhosus* alone, while after the war our chances of recovery would be equally remote if our greatest asset—the corporate life of the nation—were to remain uncared for until that wonderful period coming "after the war." But to take his financial figures alone: supposing that a Health Ministry should cost £50,000,000 a year to keep going; what do we stand to save, and what do we stand to gain? If it be indeed true that the present system, or utter lack of system, in dealing with public health has resulted (as it could not but result) in "the uttermost complexity and dislocation," is it not obvious to the most simple-minded that the co-ordination proposed is almost bound to result in an actual saving of money? Your correspondent writes as if a new Health Ministry were to be implanted upon the top of all the present departments. Can he not bring himself to envisage the doing away with all those sections and sub-

sections of departments at present so wastefully endeavouring to cure, each in its own way and from its own limited point of view, a small portion of the diseased anatomy of the State? The nation is a large field, and will not one plough work it more thoroughly and more cheaply than a host of men with spades?

I enclose, Sir, for your perusal (I am aware that you have not space for publication) a copy of a report issued by the York Local Medical and Panel Committee on the reconstruction of the Insurance Acts. In it you will see that a Health Ministry is advocated, although the report was drafted some time before it was known that there was any probability of such action as is being taken by the British Medical Association and by Lord Rhondda. It goes further, and some attempt has been made to outline a scheme for the fulfilment of the promise made when the Insurance Acts were passed, that they should actually provide for the health of the workers (and why not also of their families?).

A rough estimate convinces me that the £50,000,000 mentioned by "Scrutator" would more than provide for the institutions therein proposed, while the saving in money at present so ill spent, in life and health to the community, and in worry, irritation, and actual invaluable time to the medical profession, surely provides a balance on the credit side which should make the scheme a sound investment for the nation both during and after the war.

It remains only to heartily endorse the attitude with reference to the constitution of the proposed Health Ministry adopted in your leader in the same issue—that it should by no means consist of a "Super-Local Government Board."—I am, etc.,

J. C. LYTH,
Honorary Secretary to the York Local Medical and Panel Committee.

April 14th.

THE GERMAN ACT AND THE FREEDOM OF THE MEDICAL PROFESSION.

SIR,—The period of probation allotted to the Insurance Act has passed, and we know that when the war is over that measure will be reconsidered and recast. There are rumours of a Ministry of Public Health, rumours, too, which make us suspicious of the method of its constitution. What preparations are we making to meet proposals which may seem to us detrimental? What principles of policy have we elaborated to guide us in considering them? What machinery do we possess to support such principles, to deal with such proposals?

All three questions are profoundly important, and the sooner we set our minds to work on them the better the medicine of the future. It is only with respect to a single principle that I now crave attention for a moment. It is the fundamental principle of progress in every department of human activity. If the profession can only grasp it fully and firmly and in time, safety will already be almost half attained. I will state it as I stated it four years ago: "The fullest possible liberty is, everywhere and always, clearly the accompaniment of the fullest medical efficiency."[1] Whenever, in the past, lay control of medicine has exceeded what was reasonable, the progress and practice of medicine have been impaired. If medical men had even a rudimentary acquaintance with the wonderful history of their art, such statements would be held to be platitudes. It is because they had it not, that they tolerated so mischievous an innovation as the German Act. It was culled—this Insurance Act—straight from the Hun statute book and imposed on our profession. That it has failed is evident enough.

The three fundamental errors of this Act are:

1. The control of highly skilled and educated industry by brains wholly unqualified for such a duty by education and training.

2. The excessive interference with the liberty of the profession thus involved.

3. The inadequate remuneration. This is obvious when we consider the skill and knowledge needed, and the expense and labour of acquiring and maintaining them.

But it is only of 1 and 2 that I desire to speak here. In no other calling of equal responsibility with our own would such conditions have been tolerated for a moment. It is only the lack of self-respect and the defect of mutual loyalty, which are the curses of medicine, which made it possible to impose them upon us.

We do not know what new proposals are about to be made. Is it too much to hope that, in meeting them, we shall remember that no number of "floating sixpences" can pay for liberty lost? Let us remember the historian Buckle's words: "It is certain that men who begin by losing their independence will end by losing their energy."—I am, etc.,

Exeter, April 15th. W. GORDON.

[1] "Medicine and Liberty," BRITISH MEDICAL JOURNAL, January 11th, 1913.

INFECTIVE JAUNDICE AT GALLIPOLI.

SIR,—In his interesting account of the infective jaundice at Gallipoli, published in the BRITISH MEDICAL JOURNAL for April 7th, Lieutenant-Colonel C. J. Martin gives reasons for believing that the disease was essentially a hepatitis following systemic infection, and that Colonel Willcox and I were wrong in regarding the jaundice as catarrhal and due to plugging of the bile ducts by extension of an inflammatory process from the duodenum.

Whatever may be the source of the infection, I still believe that the jaundice was due to obstruction of the bile ducts, and not to hepatitis. It would otherwise be impossible to explain the fact that the gall bladder was definitely distended in many of the cases seen both by Colonel Willcox and myself. Direct proof that such obstruction occurred is afforded by the only autopsy that Surgeon-General H. D. Rolleston saw in a case of jaundice from Gallipoli; severe gastro-enteritis was present, and the orifice of the biliary papilla was found to be obstructed by a tenacious plug of mucus. The absence of obstruction in Colonel Martin's two fatal cases was obviously due to death having occurred from heart failure some weeks after the onset of the illness, long after the actual infection had disappeared, the slight jaundice still present in the first case being accounted for by the fact that two or three weeks may elapse before the bile pigments are completely absorbed after obstruction of the biliary passages has disappeared. For the same reason, the acute duodenitis seen by Colonel Willcox in his fatal case was absent in Colonel Martin's cases.

Colonel Martin correctly says that I was in doubt whether the infection was ascending and secondary to a duodenal infection, or descending and secondary to a systemic infection, although I was inclined towards the former view. I am still inclined to the former view, as all the points which he raises in favour of a primary systemic infection can be equally well explained on the assumption of a primary duodenal infection. Thus the inflammation and necrosis of the liver which he found in his two fatal cases, the enlargement of the spleen, and the occasional presence of albuminuria might easily be due to the action of toxins absorbed from the duodenum, and the cardiac and nervous sequelae might have the same origin, just as the similar sequelae of diphtheria are due to toxins absorbed from the local pharyngeal disease. The fact that the initial symptoms were invariably digestive, consisting of anorexia, nausea, and vomiting, with epigastric tenderness, points to an infection of the upper part of the alimentary canal, and the constant tenderness of the gall bladder, which was always more marked than the tenderness of the liver, can best be explained as a result of infection ascending from the duodenum. Moreover, a primary duodenal infection is quite compatible with a septicaemia, just as the primary infection of the ileo-caecal region in typhoid fever is associated in the early stages with the passage of organisms from the alimentary canal into the blood stream.

Colonel Martin throws doubt on the accuracy of Sarrailhé and Clunet's discovery of a paratyphoid bacillus in the cases occurring among French soldiers at Gallipoli, as no such organism was found in the blood or duodenal contents of English cases the serum of which did not agglutinate either *B. paratyphosus* A or B. But Sarrailhé and Clunet clearly state that they only found the organisms in the blood in the pre-icteric stage; whereas the English observations were rarely made before jaundice had appeared. Colonel Martin's failure to find the organism in the duodenal contents I had aspirated from eight cases was probably due to the fact that most of our cases were mild and their number was insufficient, as Frugoni, Gardenghi, and Ancona have since succeeded in isolating a paratyphoid organism from the duodenal

contents in 18 out of 68 cases among Italian soldiers. Sarrailhé and Clunet further state that the blood of their patients agglutinated the organism they isolated from the blood, but did not agglutinate *B. paratyphosus* A or B; for this reason they thought that they must be dealing with a new paratyphoid organism, a view which they subsequently modified when, six months later, they examined the cultures in Paris and found that the organisms had become modified in their cultural and agglutinative properties, and now proved to be typical or atypical *B. paratyphosus* A in 84 cases, *B. paratyphosus* B in 5 cases, and *B. typhosus* in 4 cases.

For these reasons I believe that the Gallipoli jaundice was a specific disease caused by infection of the duodenum with an organism allied to *B. paratyphosus* A; secondary septicaemia resulted from the passage of the bacilli into the blood stream, but it only lasted a few days, at the end of which the duodenal infection had led to catarrhal jaundice by more or less completely obstructing the smaller bile ducts or the mouth of the common bile duct, the general symptoms being due to the action of toxins absorbed from the duodenum.—I am, etc.,

Netley, April 9th. ARTHUR F. HURST.

WARM BEDS IN OPEN AIR.

SIR,—Your annotation in the BRITISH MEDICAL JOURNAL of March 31st on the method we have adopted at this hospital of heating mattresses electrically has aroused so much interest that I have received and am continuing to receive numerous inquiries. For the convenience of those interested perhaps you will permit me to state that a detailed report is in course of preparation for the Local Government Board. In the meantime, some preliminary particulars may be welcomed.

The system may be adopted to existing mattresses. These simply require the insertion of the heating elements. The mattresses are differentially heated to ensure that the greatest amount of heat is generated at the foot-end of the patient, a certain amount about the body, and none at all at the head. By the method of wiring adopted the mattress may be turned from side to side or foot to head, but the heating in relation to the patient nevertheless remains distributed as before described.

A mattress being usually stuffed with non-conducting material when thus electrically equipped becomes a potential heat reservoir, the heat being only gradually disseminated. This is much to be preferred to local application of heat as obtained by hot-water bottles, electric heaters, and the like, and avoids their dangers and discomforts.

The heat developed in the bed may be controlled at the bedside by either patient or attendant, throughout all the beds in the ward by the sister in charge, or throughout all the beds in the hospital by some person in authority. This flexibility of heat application is of value and is secured with exactitude and without labour. Its advantages are especially apparent when a sudden fall of temperature creates a demand for more heat, as heat is rapidly available to the extent required at negligible cost. With the rise of the thermometer the current generating the heat may be at once reduced or cut off altogether. Indeed it would be possible to cause the heat generated to be automatically regulated by thermometer for the institution as a whole, while still being available to a greater or lesser degree for individual patients.

The saving of bedding and labour is obvious, and it becomes practicable for the medical attendant to prescribe the exact amount of heat he desires to supply to any patient with the same exactness as he would order a diet or drug.

The current consumed on a 100 volt circuit is only 0.5 ampère per bed. In other words, a 20-h.p. dynamo (the equivalent of a moderate-powered motor car) is capable of supplying all the heat required for the comfort of recumbent patients in a hospital of 300 beds, whether the beds are in or out of doors, and when the maximum output of current is demanded. From this statement the cost of heating may be estimated, and it will be seen to be very low. The cost of installation is also inexpensive, but it is not yet possible for me to supply exact figures.

There is nothing to get out of order. I have used such a mattress myself for the purpose of thorough testing for the past two winters. My mattress is simply connected up with an ordinary wall plug used for supplying the current for a bedside lamp. I switch the current off before retiring, and the bed remains comfortably warm through the night if the current had been turned on some two hours previously. The bed is always well aired and the heat generated is applied scientifically where required.

As sanatorium authorities are aware, the cost of heating, lighting, water, and sewerage in large scattered institutions in remote country districts is inevitably high, and it was with a view of effecting economy and ensuring efficiency that this system of heating was designed and investigated. —I am, etc.,

H. J. GAUVAIN,
Medical Superintendent,
Lord Mayor Treloar Cripples' Hospital and College,
Alton, Hants, April 9th.

THE DANGER OF SMALL-POX.

SIR,—I have to thank Professor McWeeney for his courteous reply to my letter in which I took exception to his views as to the danger from small-pox from neglecting infantile vaccination. Those who take upon themselves to challenge the orthodox position on such a question as vaccination do not always receive quite so much consideration as he has been good enough to extend to me.

I accept Professor McWeeney's correction as to the relative efficiency of infantile vaccination in England and Ireland. Fortunately it is not very material, but I am sorry that I tried to make a point from it. I also regret if, in my reference to Germany and the outbreaks of small-pox which have recently occurred there, I appeared to "gloat," or if my tone was in any way "suggestive of the confirmed antivaccinist." I can assure Professor McWeeney that I am certainly not an antivaccinist. Between me and the antivaccinists a great gulf is fixed, inasmuch as I believe in vaccination whilst they do not; they object to vaccination *qua* vaccination, whilst I do not; indeed, I may truthfully say that no medical man in Leicester has spent so many long hours in trying to convince antivaccinists of the great value of vaccination (in certain circumstances) and to persuade them to submit to vaccination. What I object to is not vaccination but the (as I believe) exaggerated claims put forward on behalf of the practice of infantile vaccination.

To prevent misunderstanding, let me say at once that I quite agree with Professor McWeeney in his contention that the remarkable drop in small-pox mortality which occurred in the early part of the nineteenth century, following Jenner's epoch-making discovery, must be ascribed chiefly, though probably not entirely, to vaccination. I say probably not entirely, because there is evidence that small-pox mortality had reached its maximum in the eighteenth century, and had already begun to decline before the introduction of vaccination. But knowing, as I do, what the effect of vaccination is in reducing the fatality (I think this is a much more correct term than Professor McWeeney's "virulence") of small-pox, it seems to me a perfectly logical assumption that at a time when small-pox was wellnigh universal the introduction of vaccination must at first have produced a very real effect and greatly accelerated the tendency to decline which had already set it. So far, then, I am with Professor McWeeney.

But it is quite another thing to contend that if it had not been for vaccination, or rather the practice of infantile vaccination—for there is an important distinction—small-pox mortality would have remained at the same high figure as in pre-vaccination times, or that if we discontinued infantile vaccination now we should revert to the same condition as regards small-pox as then existed. I submit that there is much evidence to make us doubt this, notably the experience of communities such as the town of Leicester, which, in spite of having virtually abandoned infantile vaccination (only 10 per cent. of the births vaccinated during the last thirty-two years), has yet shown just as great a decline in small-pox mortality as has the rest of the country.

Moreover, it does not logically follow that because infantile vaccination was very beneficial at the beginning of the nineteenth century, at a time when small-pox was allowed to run riot and no alternative means of preventing it were known, it must also be very beneficial in the twentieth century when the conditions are so greatly changed, and when other and most effective means

of controlling the disease are available. To demonstrate this point, may I suggest a comparison with the practice of small-pox inoculation? This, it was believed, would be very beneficial in reducing small-pox mortality when it was introduced in the eighteenth century, but no one, I think, would suggest that it would be anything but mischievous at the present day, because, although it was undoubtedly capable of greatly reducing the *fatality* of small-pox, it also had an unfortunate tendency to increase the prevalence of the disease. In like manner, though, no doubt, to a less extent, I suggest that infantile vaccination, whilst it undoubtedly has the effect of reducing the fatality of small-pox—and therefore at a time when the disease was extremely prevalent would have the effect of reducing the mortality—yet by *masking* the disease it certainly has a tendency to encourage its spread and to thwart those measures of administrative control upon which we in England, at any rate, are rapidly coming—willingly or unwillingly—to depend.

Professor McWeeney resorts to the old argument that the great decline of small-pox in Leicester can be accounted for by the fact that the town is "surrounded by a ring fence of vaccinated populations." No doubt Leicester has benefited, like every other town, by the decline of small-pox in the country generally. In the matter of small-pox prevention no town stands alone. But whilst the decline in small-pox in the rest of the country would account for some improvement in Leicester, it is surely a totally inadequate explanation of the whole facts. It is not as if small-pox had only appeared in Leicester on a few rare occasions, on each of which the authorities had been lucky enough to control it. It is estimated that during the thirty-two years that infantile vaccination has been abandoned there have been no fewer than forty separate importations. But far more important is the fact that at three different periods the disease succeeded in attaining epidemic proportions. Moreover, on one occasion, in 1903, no fewer than 156 cases of small-pox, scattered all over the borough, occurred in the short space of twenty-eight days. Where did the supposed protection of the "ring fence of vaccinated populations" come in then?

Again, on the numerous occasions when the disease has been imported from outside, it has almost always been by vaccinated persons, and (as in other towns) the cases which have done the most mischief have been the unrecognized cases—unrecognized because they were slight, and slight because they were vaccinated.

As regards this very real danger to the community arising from unrecognized cases of small-pox in vaccinated subjects, Professor McWeeney does not deny its existence, but he tries to counter it by putting to me a test question: "Would I advise a doubting parent not to have his child vaccinated in order to save the community at large from this source of danger?" As a matter of fact, I have not infrequently had to face this very question in practice. If a doubting parent comes to me for advice as to what is best for his child, I don't worry him about the good of the community, but I lay before him the facts as they appear to me. I point out to him that vaccination will undoubtedly protect the child for a certain number of years, and after that will confer partial protection for a further period. At the same time I say that the risk of being exposed to the infection of small-pox in this country is, under modern conditions, extremely remote, as small-pox has become one of our rarest zymotics and, when recognized, is now invariably isolated; also, that even after a chance exposure (again assuming that the case is recognized), there is still time to take advantage of the protection conferred by vaccination; also I say that should an epidemic occur at any time the child could then be vaccinated and would get the advantage of recent vaccination. On the other hand, I point out that there is a certain though small risk in the operation of vaccination. The parent must decide which he will take. In one case where mother and child were about to sail for India (where small-pox is endemic), I strongly urged that the child should be vaccinated, though the medical men in attendance took a different view as the child was delicate. But whilst it is one thing to advise parents as to what we think is in the best interest of the child, it is quite another thing to compel parents against their convictions to have their children vaccinated on the ground that it is for the good of the community (for, after all, that is the ostensible justification for compulsory infantile vaccination) if that supposed good is open to doubt.

There are other points in Professor McWeeney's letter which I should like to have referred to, but I have already trespassed far too much on your space.

As regards Dr. Reginald Broadbent's letter, the two instances he quotes, and I could add a number of similar ones from my own experience, prove—as has so often been proved almost *ad nauseam*—that recent vaccination undoubtedly protects the individual. It is instances such as these that have led medical men to assume that infantile vaccination must necessarily be good for the community. Dr. Broadbent's second instance (in which vaccinated parents suffering from unrecognized small-pox infected their unvaccinated child) is one more illustration in support of my contention that vaccinated persons are a danger to the unvaccinated rather than vice versa. Dr. Broadbent says that I "exaggerate the importance of the undoubted fact that small-pox is spread occasionally by vaccinated persons who have it in so mild a form that it is liable to be overlooked." I suggest that it is rather he who underestimates this danger, but it will be soon enough to decide who is right when this aspect of the vaccination question has been more fully considered. It is something to have it admitted that such a danger does exist, because hitherto provaccinists—with scarcely an exception—have never even referred to this danger, and until recently it has hardly been discussed.—I am, etc.,

C. KILLICK MILLARD,
Medical Officer of Health.

Leicester, April 15th.

SIR,—If I understand correctly Dr. Millard's attitude towards vaccination, he advocates that compulsory infant vaccination should be abolished, and reliance placed upon improvement of sanitary conditions, and upon what has somewhat erroneously come to be known as the "Leicester method," for combating outbreaks of small-pox. I am fully convinced that the advocacy of such a course, particularly by any one holding the responsible position Dr. Millard holds, is fraught with grave danger to the community, more especially the helpless child portion thereof. The following figures so clearly illustrate the risks to which the latter are exposed from neglect of vaccination that they deserve the very careful consideration of all interested in this subject.

The records of the Metropolitan Asylums Board hospitals show that of 998 cases of small-pox in children under five years of age, 25 only were vaccinated, and that all of these had mild discrete attacks; of the remaining 973, 756 were unvaccinated and 217 were vaccinated for the first time after having been exposed to infection; of the unvaccinated children, 297 contracted confluent small-pox and 239 died; the remainder got discrete small-pox of various degrees of severity and 87 died. Of the children who were vaccinated after being exposed to infection, 44 contracted confluent small-pox and 173 discrete small-pox; of the former 38 died, and of the latter 37.

All these children lived under practically the same sanitary conditions in one or other of the London boroughs, and it can hardly be seriously contended that the extremely small number and mild character of the vaccinated cases was in any way attributable to their more favourable environment. On the other hand, it would be no exaggeration to say that the deaths of the 400 unvaccinated children—to say nothing of the suffering, disfigurement, impairment of vision, and in at least one case total blindness, inflicted on the survivors—were directly and wholly due to the neglect of infant vaccination. The 217 cases with 75 deaths amongst children vaccinated after exposure to infection illustrates the futility of relying upon this as the chief means for controlling the spread of small-pox.

Dr. Millard rightly attaches great importance to the unrecognized mild case as a means of disseminating the disease, and, I believe, puts forward the fact of their occurrence as an additional argument in favour of his proposal. Unfortunately mistakes in diagnosis are—and, I fear, will remain—unavoidable. That their number would be diminished in the absence of vaccination is possibly true, though this result could necessarily only be obtained by increasing the number of severe and obvious cases. On the other hand, I do not think it is sufficiently realized that mild cases of small-pox do occur amongst unvaccinated children, and that the very fact of their

being unvaccinated may be the determining factor in the making of a wrong diagnosis.

I cannot see how the bald facts represented by the figures I have given can be regarded in any other light than as a proof of the urgent necessity for strengthening the present legislation in regard to vaccination. If small-pox is as prevalent in Germany as it is reported to be, it can only be a matter of time before cases are imported into this country, in which case a heavy responsibility will rest upon those who in any way encourage the continued neglect of vaccination amongst children.—I am, etc.,

Gravesend, April 15th. ARCHIBALD KIDD.

MEDICAL EXAMINATION OF RECRUITS.

SIR,—A recent question in the House of Commons and various statements in the lay press reflect unjustly on the honesty and competence of the Army Medical Recruiting Boards. I hope you will publish this letter, as the medical men concerned are forbidden to reply to criticism in the ordinary press and the authorities seem to consider it no part of their duty to defend their medical examiners of recruits.

With regard to errors of opinion, a certain number of these is inevitable, as every medical man knows, and many cases must arise in which two medical men of equal competence and integrity come to a different conclusion as to fitness for military service. I remember how some years ago a thousand diagnoses made before death in a certain hospital were compared with the results found *post mortem*; the percentage of accuracy was 85.

To the question why cases are now passed as "A" when they were formerly—perhaps on several occasions—rejected, the answer is that the standard of examination is constantly changing and has been gradually tightened up as the national emergency has increased; and the medical examiners, who do not make the rules and merely have to do their best to carry out orders from above, cannot be held responsible for the hardships inflicted by changing standards. Critics seem to forget that the original standard was fitness for twelve years' service, with the result that many small defects sufficient at that time for total rejection now no longer count as reasons for rejection. Up to nine months ago defects of eyesight which are now held to be no bar to service were the cause of many refusals.

With regard to the frequent allegation that the certificates of private medical men are ignored, it must be remembered that a large number of recruits coming up for examination are doing their utmost by any means to avoid service. Medical examiners would not be doing their duty if they accepted all medical certificates on production; they have a clear right to act on their own judgement. Much trouble has arisen because private practitioners will send in certificates, correct enough as to the facts of disease or disability, but mere guess-work so far as an opinion as to total unfitness for any military service is concerned. In such cases the medical examiners receive the medical man's opinion on the point on which he is qualified to judge, but do not necessarily adopt his view on a matter which they are more competent to decide.

The greatest trouble has been about heart cases; a large number of the men who produce heart certificates are cases of functional murmurs, not needing rejection, often only needing training to fit them for service. Too often the statement, "My doctor says I have heart disease" is an opinion founded on incomplete examination. In many cases presenting heart murmurs, which disappear when the patient lies down, it is found that the private practitioner has only listened to the heart when the body was erect.

But beyond questions of honest differences of opinion, we cannot ignore the obvious fact that many certificates of unfitness which come before us have only too evidently been forced under duress from the family medical man, "If you want to remain our doctor you must find some reason why I should be rejected."

With the old rejected men now about to be called up once more, the task of the Medical Recruiting Boards will be much harder.—I am, etc.,

April 12th. EXAMINER OF RECRUITS.

Obituary.

SURGEON-GENERAL SIR WILLIAM TAYLOR, K.C.B., M.D.GLAS., K.H.P.,

LATE DIRECTOR-GENERAL ARMY MEDICAL SERVICE.

SURGEON-GENERAL SIR WILLIAM TAYLOR, K.C.B., late Director-General, Army Medical Staff, died at Windsor on March 10th, aged 74. He was the third son of the late James Taylor, of Etruria, Staffordshire, was born at Moorfield, Ayrshire, on April 5th, 1843, and was educated at Carmichael, Ayrshire, and at Glasgow University, where he graduated M.D. and C.M. in 1864. On September 30th, 1864, he received a commission as assistant-surgeon in the Army Medical Department, in which he had a long and brilliant career of over forty years. From 1865 to 1869 he served in Canada, taking part in the operations on the Vermont frontier against Fenian raiders, and receiving the medal. He returned to England in 1869, and in 1870 was gazetted to the Royal Artillery. In 1873 he went out to India, and in 1877 served with the Jowaki Afreedee expedition, for which he received the medal. After a short service in England he returned to India in 1882 (Bombay Presidency), and in 1885 he was appointed surgeon to Sir Frederick Roberts, who was then Commander-in-Chief in India. In 1885–86 he served on the staff of the Commander-in-Chief in India during the Burmese Expedition, and was mentioned in dispatches. He served also with the Hazara Expedition in 1888, and in the Burmese campaign of 1888–89. In 1893 he was appointed to head quarters in London, but in the following year was appointed medico-military attaché to the head quarters of the Japanese army during the Japan and China war. He received the Japanese war medal. He was principal medical officer of the Ashanti Expedition under Sir Francis Scott (1895–6), and for his services on this occasion was made surgeon-major-general. This was a most successful campaign, and its success was in large measure due to the excellence of the precautions taken for the preservation of the health of the troops; Taylor received the star granted for the campaign, and was specially promoted to surgeon-general. In 1896 he became professional assistant to the Director-General, but two years later was appointed principal medical officer to the forces in the Soudan campaign, under Sir Herbert Kitchener; he was present at the battle of Omdurman, and received the C.B., the medal, the Khedive's bronze star, and the Medjidie. In the same year he was appointed principal medical officer to the British Army in India and held that post for three years, till he became Director-General of the Army Medical Service on December 3rd, 1901, in the late stage of the Boer war. On August 21st, 1901, he was gazetted honorary physician to the King, and in 1902 received the K.C.B. His *Alma Mater*, the University of Glasgow, bestowed upon him the honorary degree of LL.D. He retired on December 2nd, 1904, after forty years' service in the army, during which he had served in six campaigns, and had risen to the highest position open to a medical officer. A man of genial presence and strong social instincts he quickly made his way in all companies, and proved a strong and popular head of his service. He had recently been serving as commandant of the British Red Cross Military Hospital at Englefield Green.

The funeral, which took place at Windsor Cemetery on April 14th, was attended, among others, by representatives of Prince and Princess Christian, and of the staff of nurses of the Princess Christian Military Hospital, and by Sir Alfred Keogh, G.C.B., Director-General A.M.S., Sir William Babtie, V.C., K.C.M.G., D.M.S. War Office, Sir Launcelotte Gubbins, K.C.B., late Director-General A.M.S, Colonel Peterkin, D.D.M.S. London District, Sir John Furley, representing the British Red Cross Society, and the Mayor of Windsor.

We are indebted to Sir ALFRED KEOGH, G.C.B., for the following graceful tribute to the work of one of his predecessors in the office of D.G., A.M.S.:

Sir William Taylor was one of the few remaining officers of the medical branch of the army who, although trained under the regimental system, took a prominent part in the work of unification to which the country owes so much. In his younger days his personal qualities enabled him to wield an influence of immeasurable im-

portance in securing the results which were expected from the scheme of Sir William Muir. Those of us who knew him intimately soon learnt to recognize that his contribution to the development of the new system was rather of a conservative kind, and that he was an ardent advocate for the gradual evolution of the Corps rather than a supporter of the more drastic methods of reform. In this he was justified by his long experience at head quarters in England and in India. No man was better acquainted with the official atmosphere or knew better when to support or even to provoke changes, and when to restrain the impetuosity of the more forward spirits of the new era. But he was not reactionary. He would perhaps have preferred to foster the development of science within the Medical Corps, as his work in India shows, rather than devote himself to organization. When the reorganization of the Medical Corps was taken in hand by Mr. Brodrick he was selected for the post of Director-General and charged with giving effect to the new measures, while expected to exercise a certain restraint. His official position was, therefore, one of exceptional difficulty, and he laid down his office with gladness, having managed with conspicuous success to control the conflicting opinions on those details for which it is often so difficult to provide. Taylor's influence on army medical affairs had often been great, but never greater, as we came to recognize, than when he held the post of Director-General. His interest in the progress of the Service was not abated by his retirement, and his influence on the course of events may be said to have increased. It is unnecessary here to speak of Taylor as a man apart from his profession. He was well known and exceptionally popular in the army, a sportsman, a fine horseman, a wide reader, and a lover of literature.

DR. WILLIAM MABON, emeritus professor of mental diseases in the University and Bellvue Medical College, New York, died on February 9th, at the age of 56. He took his degree at Bellevue in 1881, and, after occupying the post of superintendent of the Bellevue and Allied Hospitals for some years, he was in 1904 appointed president of the State Hospital Commission. Two years later he was placed at the head of the Manhattan State Hospital, the largest institution for the insane in the world. He was consulting physician to the New York Hospital for Deformities and Joint Diseases, and consulting alienist to the Neurological Institute.

PROFESSOR GIOVANNI PALADINO, of Naples, who died on January 25th, was born at Potenza in 1842. He studied medicine and took his doctor's degree at Naples. He worked for a considerable time at Leipzig under Ludwig and at Berlin under Du Bois Reymond. After holding some junior appointments he was called to the chair of histology and general physiology in the university, which he occupied till his death. He was the author of textbooks of histology and physiology, which have gone through several editions. The most important of his researches were those on the destruction and continuous renovation of the ovarian parenchyma in mammals and on the atrio-ventricular bundles in mammals. In 1908 he was created a senator of the Kingdom of Italy.

Universities and Colleges.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council was held on April 12th, when Sir Watson Cheyne, President, was in the chair.

Jacksonian Prize.

This prize was awarded to Mr. Ernest W. Hey Groves, F.R.C.S., of Clifton, for his dissertation on methods and results of transplantation of bone in the repair of defects caused by injuries or disease. The following subject for the Jacksonian Prize for the year 1918 was selected: "The Injuries and Diseases of the Pancreas and Their Surgical Treatment."

Sir Arthur Sloggett, K.C.B., D.G.A.M.S.

Surgeon-General Sir Arthur Thomas Sloggett, K.C.B., C.M.G., Director-General Army Medical Services (France), was elected a Fellow under Section 5 of the Charter relating to members of twenty years' standing.

Central Midwives Board.

Dr. Walter Spencer Anderson Griffith, M.D., F.R.C.P., F.R.C.S., was appointed representative of the College on the above Board in the vacancy occasioned by the retirement of Mr. C. H. Golding-Bird.

University of London.

Mr. Charters J. Symonds, C.B., M.S., F.R.C.S., was appointed to represent the College on the Senate of the University of London in the vacancy occasioned by the retirement of Sir Rickman J. Godlee, Bt., K.C.V.O.

Assistant Pathological Curator to the Museum.

The title of the post held by Mr. C. F. Beadles was altered from Pathological Assistant to Assistant Pathological Curator.

The Services.

EXCHANGE.

M.O. of Infantry Battalion in France desires exchange with officer in training centre or hospital at home.—Address No. 1300, BRITISH MEDICAL JOURNAL Office, 429, Strand.

Medical News.

SIR ERNEST GOODHART, Bt., and Mr. Gordon Goodhart have given the sum of £300 to Epsom College in memory of their father, Sir James Fred. Goodhart, Bt., M.D., who was one of the earliest pupils at the College.

THE next session of the General Medical Council will begin on Tuesday, May 22nd, when the President, Sir Donald MacAlister, K.C.B., will take the chair and give an address at 2 p.m.

A DECREASE is to be noted in the Home Office return of fatal street accidents for 1916 in England, Wales, Scotland, and Ireland; the figures being 2,837, as compared with 3,014 in 1915. There were 51,441 non-fatal accidents.

IN the obituary notice of Professor Dejerine, published on April 14th, it was, by a slip of the pen, said that the Moxon medal was awarded to him by the Royal Society. The Moxon medal for observation and research in clinical medicine is in the gift of the Royal College of Physicians of London, and was awarded by the College to Professor Dejerine in 1915.

A PAMPHLET entitled *Race Renewal* has been issued by the National Council of Public Morals (20, Bedford Square, London, W.C.), with a preface by the president, the Bishop of Birmingham. The activities of the Council up to the end of last year are described, special attention being given to the report of the private Commission on the National Birth-rate, which was reviewed in our issue of July 8th, 1916. In spite of the war the work of the Council has gone forward in various other directions, such as an inquiry into the influence of cinematographs, the education of public opinion in matters of sex, and a petition to the Chancellor of the Exchequer to diminish the penalties upon parenthood.

ON April 14th Princess Christian paid a visit to the College of Ambulance, 3, Vere Street, London, W., and witnessed a display of ambulance work given by the No. 1 London Voluntary Aid Detachment of the Red Cross Society. Her Royal Highness was received by the President of the College, Sir Rickman Godlee, and the Principal, Colonel James Cantlie. A transport section of fifty cars was inspected, and subsequently a demonstration of methods and technique of teaching of ambulance work was given. After the display the President asked Princess Christian to accept the first certificate of honorary fellowship of the College.

THE appropriations made by the Rockefeller Foundation during 1916 amounted to upwards of 8,249,000 dollars. The largest appropriations were for war relief purposes, making a sum of 2,590,000 dollars; the total amount appropriated for these purposes since the beginning of the war has been nearly 4,182,000 dollars. During the year the Foundation granted more than 600,000 dollars to the International Health Board, a subsidiary organization dealing mainly with methods for the relief and control of hookworm disease in the Southern States, in various Latin-American countries, and in several British Colonies. This board has also made a survey of the principal epidemic foci of yellow fever, and has undertaken experimental work in connexion with the control of malaria. The China Medical Board, another subsidiary organization, which is devoted to the promotion of medical education in China, received from the Foundation over a million dollars.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

R. asks for advice as to treatment of acne of some years' standing in a child 12 years old. It commenced over the malar areas and is extending over the cheeks. All usual internal medication has been tried, while externally antiseptic soaps and various ointments have been used. There has never been suppuration nor blackheads, but "pitting" after subsidence of each crop.

INCOME TAX.

VOX inquires whether a retaining fee to attend men stationed in barracks is assessable as earned income in view of the fact that the retaining fee is temporary "for the period of the war."

*** Yes; if the fee does not accrue as a profit arising from medical practice, it would seem to be in any case a fee or perquisite of office and assessable as such.

PETROL DUTY REBATE.

PERPLEXED inquires whether the rebate should be 3d. or 4½d. a gallon.

*** Section 84 of the Finance (1909-10) Act, 1910, imposed a duty of 3d. a gallon, and Section 15 of the Finance Act, 1916, imposed a duty of 6d. a gallon, "in addition to any other duties imposed by law." The rebate applied to both duties, and the answer to our correspondent's inquiry is, therefore, 4½d., provided, of course, that the full duty of 9d. a gallon has been paid directly or indirectly.

ANSWERS.

M.B.—The most likely home for such a case as that described—a woman mentally deficient, suffering from enuresis but not helpless—and within the limits of payment mentioned, would be one of those established by the Incorporation for National Institutions for Persons Requiring Care and Control, offices, 14, Howick Place, Westminster, S.W. Information from Rev. H. K. Burden, the Warden.

LETTERS, NOTES, ETC.

BRILLIANT GREEN OINTMENT.

MESSRS. C. J. HEWLETT AND SON write to point out that there is an error in the formula given by Captain R. W. Hodgson-Jones (April 7th, p. 455). To obtain a 1 per cent. ointment, two ounces of soft paraffin should have been specified.

A MEDICAL PRACTITIONER'S SUCCESSFUL CLAIM.

IN the Bolton County Court Lieutenant-Colonel H. G. Parker, R.A.M.C.(T.F.), sued a photographer for 15 guineas for professional services rendered. The plaintiff's counsel stated that Colonel Parker attended defendant for corneal ulcer. The answer to the claim was a suggestion of negligence. Dr. Hill Griffith, ophthalmic surgeon to the Manchester Royal Infirmary, gave evidence that there had been no negligence either in treatment or in the number of attendances given. Counsel for the defendant contended that the charges were excessive and that the defendant had suffered injury and loss from the alleged neglect. A counter claim for £50 was put in. The jury found for Colonel Parker on both the claim and counter claim, with costs. Plaintiff's solicitor at the conclusion of the case said that, in view of a suggestion that had been made against the plaintiff's patriotism, he wished to point out that Colonel Parker went to Egypt in 1914 with a Territorial unit, and was in the Gallipoli campaign. He was now invalided home. Judge Spencer Hogg said that no one regretted more than himself that any suggestion of the sort had been made, and he was sure that the jury would equally regret it.

SAMUEL PEPYS, M.R.C.S.

Extracts from the Diary, 1917.

February 17th. Up betimes, as it is war time, and the sick do call and send for me in greater number than ever before. And this, because, my good friends who, with me, make the practise of physick in this district, have sailed across the seas, with the King's Armies. Which, is a right and proper way, and shews a patriotick temper, in chirurgeons, who are of the age for military service. The wants of the nation must come before all other things. And were I not forty-and-five years of age, I would answer the bidding of the Warr Office and march also. But, it is meet that some should stay behind and earn moneys to lend for the King's use. So, God be praised, I find that my neighbours, even now, after so many years, have found out my greater skill in the practise of the noble art of physick. They do say that the *locum tenens* doth not understand infants and hysterick women. And so, I write to the banquer, that he may lend my gettings, at 5 *per centum*, to the King, his Chancellor. And do pray that I may soon be able to pay for my new car from Amerique.

February 18th. After dinner, I read in the news sheet of the British Medical Association that the Warr Office doth call for more chirurgeons and that a Warr Committee is sitting to choose who shall go and who shall stay at home. Which do trouble and perplex me to the heart, and I shall not let any Committee bid me to leave my house, where my neighbours do so need me in the many colicks and defluxions, from which they suffer and I, only, can find panaceas for them.

In the evening, comes a cordwainer, thirty-nine years of age, to beg that I give him writings, to take to the Military Tribunal, that he may not be pressed for the King's army. He tells me that in Winter, he is stricken with divers humours and a trembling of the joints, and cannot fight. Lord, that such an unpatriotick man should be in England, and the war, now for over two years. I did rate him pretty smart and would give him no writings.

February 19th. Met my old fellow student, Bilkins, who I had not seen for sixteen years, when he did wed a maid, whose father owned many shoppes, and when taken by God, did leave to her, one thousand pounds *per annum*. She, that jealous of Bilkins, would never let him use his skill at physick lest, perchance, well-favoured wenches should call on him. So that, in times of the peace, he hath only played the games of golf and bridge. But now, he hath for two years served the King in a field ambulance and hath returned with a grievous wound in his thigh and the Military Cross given to him by the King's Majesty. Which, I wondered at and commended him mightily. And it did cheer my heart to feel, that were it not for my wife, poor soul, and the sick folk in England, I would do even as Bilkins hath. Moreover, when we were students at the Spittall of Saint Thomas, I was always counted a more cunning leech than he.

February 20th. My wife tells me that her cousin, Nan, now for six months member of a Voluntary Aid Detachment for nursing of the wounded, of the King's armies, is like to marry a horse-soldier of the Southern Seas. And that his father owns thousands of sheep and abundance of wheat-lands. Whereat I am glad, as she is of a witty discourse and do look mighty smart in her nursing uniform.

February 21st. Mighty concerned at the demand note for my income tax. The amount thereof is a grief to my soul. But my late gettings have been very great to my great content, and am likely to have a few more profitable jobbs in a little while.

February 22nd. A fine afternoon, so my wife do ask that she may have the car to drive forth and see her Aunt Deborah at Epsum. I do tell her that the plaguey Petrol Control Committee have allowed me petrol in such small measure that there shall be no joy-rides. But Lord! how the wretch rated me, crying, that on Saturday seven-night I rode in the car to the Golf Club. Which is a woman's way. But I do not give in.

To the Club, where I meet Progers. He teaches the wench, who acts as waitress—the waiters having all joined the King's armies—to make a new cocktail. Which is mighty pleasing! All our discourse was of the British Medical Association. How that, the Committee should bring about, that all chirurgeons and apothecaries who labour under the Act of National Insurance, should be paid fifty *per centum* more than in time of peace. And that their labours should be lessened withal. And we did marvel of what use the Association could be, seeing that the subscription is now two guineas *per annum*. A large sum when we must, perforce, be careful of all monies. So, to Bridge, whereat I lose five pounds through the evil play of my partners. But a merry evening. And so home and to bed.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive poste *restante* letters addressed either in initials or numbers.